

# Entrepreneurial Implementation Intention: The Role of Psychological Capital and Entrepreneurship Education

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## Abstract

Scholars and policymakers are increasingly interested in the influence of Entrepreneurship Education on entrepreneurial attitudes, as well as in the human capital developed from entrepreneurship programs. Thus, to further clarify the effectiveness of entrepreneurship education as a catalyst for entrepreneurial activity, this study investigates the intervening role of psychological capital in the link between entrepreneurship education and entrepreneurial behavior. To interrogate this premise, a sample of 262 UK students is examined by a structural equation model. The proposed model draws on an integrated social cognitive career theory with a PsyCap lens. The results indicate that although psychological capital partially mediates the influence of entrepreneurship education on Entrepreneurial Intention, this outcome is only driven by the effects of hope and self-efficacy, with hope bearing a stronger influence. Surprisingly, the anticipated impact of optimism and resilience did not materialise. These findings pose important implications for theory and practice by offering a more holistic framework underlying the EE-EI nexus.

**Keywords:** *Psychological Capital; Self-Efficacy; Hope; Optimism; Resilience, Implementation Intention.*

## INTRODUCTION

Investment in entrepreneurship education (EE hereafter) has been prompted by the public and institutional desire to increase the rate of venture creation in multiple national and regional contexts (Hoppe, 2016; Ayob, 2021). Both policymakers and scholars concede that effective EE is one of the bedrocks for sustained economic growth and technological advancement (Fellnhofer and Kraus, 2015; Pathak, 2019). Hence, the volume of research investigating hidden influences in the link between EE and entrepreneurial intention [EI hereafter] is ever-growing (Walter and Block 2016; Mukesh *et al.*, 2019; Zaring *et al.*, 2019; Ahmed *et al.*, 2020; Onjewu *et al.*, 2021; Haddoud *et al.*, 2022; Tseng *et al.*, 2022). Although many studies have established that EE has a positive impact on EI (Izedonmi and Okafor, 2010; Zhang *et al.*, 2014; Barba-Sánchez and Atienza-Sahuquillo, 2018), conflicting evidence abound with suggestions that EE plays a trivial or even counterproductive role (Von Graevenitz *et al.*, 2010; Higgins and Elliott, 2011; Lorz *et al.*, 2011). This contradiction casts ambiguity about EE's influence (Schultz, 2021), and has prompted researchers to explore a diversity of factors that are likely to meddle in the EE-EI relationship (Nabi *et al.*, 2017; Haddoud *et al.*, 2022).

Notwithstanding the weight and validity of current evidence, consideration of Psychological Capital (PsyCap) as a further intervening factor in the EE and entrepreneurial behavior nexus has eluded the contemporary literature. While there is existing knowledge on the influences of inspiration, passion, ambiguity tolerance and beliefs in this link, research on mindsets remain a largely uncharted territory (Nabi *et al.*, 2017). Pfeifer *et al.* (2016) stressed that there is value in seeking to understand and subsequently shape the mindset of students. Thus, a gap in understanding (1) how this mindset can contribute to entrepreneurial intentions and (2) whether entrepreneurial education can contribute to its emergence is apparent here. In this respect, this study seeks to observe and clarify the mediating role of mindset in the entrepreneurial

education-intention nexus. It draws upon Luthans *et al.*'s (2007) psychological capital construct comprised of (1) self-efficacy, (2) optimism, (3) hope and (4) resilience. The authors described these dimensions as a set of resources accessible for enhancing performance and successful conduct of behavior, at the individual and the organisational level. Likewise, Sebor and Tantiukoskula (2011) attest that psychological capital reflects students' predisposition towards entrepreneurial activity.

Based on the foregoing and drawing on Social Cognitive Career Theory (SCCT) (Lent *et al.*, 1994), it is arguable that exposure to entrepreneurship education supports the development of entrepreneurial self-efficacy. Thus, when coupled with the positive outcomes arising from optimism, hope and resilience, a strong interest in an entrepreneurial career could be generated. As outlined by Ephrem *et al.* (2019: 975), self-efficacy, optimism, hope and resilience 'might be a significant addition to the content of EE', and may offer a 'feasible preview of small business ownership that vaccinates against negative expectations and enhance psychological capital'. Therefore, this study integrates SCTT with PsyCAP to investigate the mediating role of both cognitive factors (self-efficacy) and outcome expectations (hope, optimism and resilience) as missing links in the EE-entrepreneurial implementation intention [EII hereafter] nexus. In terms of its setting, the study was undertaken in the United Kingdom (UK). The context poses peculiar challenges for nascent entrepreneurs, underscoring the necessity to examine support mechanisms that can facilitate entrepreneurial activity. The ensuing results suggest that only two of the four subdimensions of psychological capital, namely self-efficacy and hope, mediate the positive influence of EE on EII.

The contributions of this paper reside in three domains. First, this study is one of the first to empirically test the psychological capital factors in respect of EE and EII. In so doing, it acquiesces Krueger (2007), Pfeifer *et al.* (2016) and Nabi *et al.*'s (2017) exhortation to address entrepreneurial mindset. Secondly, the study uses a more accurate conceptualization of entrepreneurial activity through implementation intention. While EI reflects individual intent to commence entrepreneurship, EII goes a step further by estimating the resolve to launch a new venture (Krueger, 2017), and is deemed to be a more robust proxy for venture creation (Fayolle and Liñán, 2014). In Adam and Fayolle's (2016) estimation, the variance between EI and EII is as high as 37%. This difference is echoed in Gollwitzer (1999) and Gollwitzer and Sheeran's (2006) contention that EII is more of a volitional phase that is led by actions eliciting the intended behavior. For a third contribution, surprisingly, the Global Entrepreneurship Monitor [GEM hereafter] (2023) reported that EE is the least developed supporting condition for venture creation, compared to physical infrastructure, knowledge transfer and favorable government policy. This is a paradox in view of the large investment and provision of EE across many a country (Matlay and Carey, 2007; Jones *et al.*, 2017).

The rest of this paper is laid out as follows: In section 2, a macro account of the UK's entrepreneurship landscape is offered. In section 3, the literature review provides a theoretical background. This is flanked by the study's method in section 4. In section 5, the results are presented and this leads to a discussion in section 6. Lastly, in section 7, conclusions are drawn for entrepreneurship theory and practice.

## **THE STUDY CONTEXT**

The observations in this study are from the UK. Hence, an overview of the unique conditions faced by nascent entrepreneurs in the setting is timely. In 2020, the World Bank placed the UK

as number 18 out of 190 on the global ‘starting a business’ ranking (The World Bank, 2020). Although nearer the top of the tree, the UK fell behind a number of low-middle-income and less developed countries like Armenia [ranked number 10], Georgia [ranked number 2], Jamaica [ranked number 6], Kosovo [ranked number 12], Moldova [ranked number 13], Togo [ranked number 15] and Uzbekistan [ranked number 8]. The UK was also bettered by developed country peers like Australia [ranked number 7], Canada [ranked number 3], New Zealand [ranked number 1] and Singapore [ranked number 4]. This outcome is confounding on the back of a long-term industrial strategy to expand the availability of finance for small businesses and a sustained campaign promoting self-employment. According to Global Entrepreneurship Monitor (2023) supportive and constraining new venture conditions place the UK at a disadvantage against certain emerging economies. The UK had a less than satisfactory score of 4.7/10 for the National Entrepreneurship Context Index (NECI). India [6.1/10], Taiwan [6.2/10] and Indonesia [5.8/10] performed better in this regard (GEM, 2023). When total early-stage entrepreneurship among the 18 – 64 age band was evaluated among high-income countries, the UK’s activity was only 9%, giving it a rank of 22 out of 33. In case of self-employment among young adults, with a rate of self-employment at 9.9% for men and 4.7% for women, the UK exceeds OECD countries like Germany, Ireland, France and Finland, but lags behind Poland, Italy and The Czech Republic (OECD, 2024). For these reasons, empirical insights for nurturing greater EII is critical and much-needed in the UK. The challenging terrain also makes it an ideal context to test the mediating effect of psychological capital in the EE-EII relationship.

## **LITERATURE REVIEW**

### **Goal Intention and Implementation Intention**

From a cognitive stance, intentions are predictors of human behavior (Krueger *et al.*, 2000; Gorgievski *et al.*, 2018). They reflect how hard people are willing to try, or how much effort they are planning to exert to perform a behavior (Ajzen, 1991; Kolvereid and Isaksen, 2006).

Ajzen *et al.* (2018) assert that intentions emanate from individuals' attitudes and become the immediate determinant of their behavior. However, transitioning from an intention to a behavior is a process both for goal intention and implementation intention (Gollwitzer, 1993). In the psychology literature, intention encompasses two components: (1) *Goal Intention* and (2) *Implementation Intention* (Gollwitzer, 1993, 1999; Adam and Fayolle, 2015). Goal intention refers to the statement “*I intend to perform X*”, while implementation intention corresponds to “*I intend to perform goal-directed behavior X when I encounter situation Y*”. The latter, implementation intention, is when the individual envisages a specific plan for how the desired behavior will be performed (Adam and Fayolle, 2015; Ismail *et al.*, 2018). Krueger (2017) highlights the distinction between being goal intent, referring to the desire to begin a process, and being implementation intent, referring to the act of beginning a process, like launching a new venture.

Entrepreneurship researchers have generally highlighted the importance of implementation intention theory as implementation intention is a self-regulatory trait that can lead to better goal attainment (Gollwitzer, 1999). Individuals who form a specific plan detailing where, when and how a desired behavior will be performed have a greater likelihood of performing it in due course (Haddoud *et al.*, 2022). In this context, Frese (2009) offers an action-theory perspective based on implementation-intention theory and thus provides evidence about the necessity of estimating implementation intention. Likewise, Fayolle *et al.* (2011) contend that the strength of commitment to both the goal and the plan is important for implementation intention to materialize as they generate enthusiasm for the intended behavior.

### **Theoretical framework**

This study is based on Lent *et al.*'s (1994) Social Cognitive Career Theory. It postulates that interactions between cognitive and interpersonal factors, along with external factors shape

individuals' career development. In the proposed model, it is posited that the connections between external influences (through entrepreneurship education), cognitive and interpersonal factors (through the PsyCap dimensions) shape the development of entrepreneurial intention (career development). Precisely, the link between EE and psychological capital is informed by social cognitive career theory which associates career-related self-efficacy as well as outcome expectations with learning experiences (Lent *et al.* 1994). Furthermore, Lent *et al.* (2002) add that individuals' learning experiences shore up their self-efficacy and outcome expectation to strengthen or modify career choices. Following this logic, learning experiences derived from EE can contribute to ESE but also to other dimensions of psychological capital closely related to outcome expectation, such as optimism, hope and coping skills like resilience (Hasan *et al.*, 2019). In this vein, EE programs shift individuals' thinking from present-fatalism to a future-oriented style (Georgiou *et al.*, 2019; Massar *et al.*, 2020). It can be assumed that individuals who are optimistic and hopeful towards new business development, and at the same time demonstrate resilience amidst potential obstacles demonstrate positive outcome expectation in relation to an entrepreneurial career.

In summary, while previous studies on entrepreneurial career choice are rooted in social cognitive career theory (Adebusuyi *et al.* 2022; Pfeifer *et al.*, 2016; Segal *et al.*, 2002; Vanevenhoven & Liguori, 2013), this study appraises Psychological Capital instead to offer a more holistic view by capturing the outcome expectation dimension vis-à-vis individuals' positive outlook towards an entrepreneurial future. While social cognitive career theory informs the premise of this research as entrepreneurship education aids the development of entrepreneurial goal intention, the more coveted implementation intention may be aroused by Psychological Capital.

## **Conceptual Framework**

### ***EE and EI***

EE has been defined as the teaching of business creation skills. However, contemporary definitions have been broadened to include the delivery of knowledge about entrepreneurial behavior which does not necessarily mean creating a new business (Ratten and Jones, 2021; Wang *et al.*, 2022). The role of EE programs in enhancing EI has been widely examined in the literature (Walter *et al.*, 2013; Ismail *et al.*, 2018; Sansone *et al.*, 2021). Souitaris *et al.* (2007) assert that learning from an EE program would facilitate knowledge about entrepreneurship through the identification of motivation, knowledge, ability, skills, social networks, experience and intuition. Empirically, Jena (2020) found that a favorable attitude towards EE holds a strong and positive influence on EI. Likewise, Sansone *et al.* (2021) revealed that in the US, EE, particularly practical courses, increases the number of new academic spinoffs. Lastly, the lack of EE was found to be one of the main obstacles hindering university students from starting their own business (Arranz *et al.*, 2019).

### ***The Role of Psychological Capital***

As a construct, psychological capital is of recent consideration in entrepreneurship studies. It refers to individuals' mental state as characterised by their confidence that the future would be better than the present (Sebora and Tantiukoskula, 2011). Luthans *et al.* (2007:3) explain further that psychological capital is:

*An individual's positive psychological state of development that is characterized by: (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success.*

Thus, the four dimensions of psychological capital are (1) self-efficacy, (2) optimism, (3) hope and (4) resilience, and they are considered to be a state of being rather than traits (Sebora and

Tantiukoskula, 2011; Salavou *et al.*, 2023; Wang *et al.*, 2023), as they can be learnt and developed (Luthans *et al.*, 2006; Dello Russo and Stoykova, 2015; Rhoads, 2016). Psychological capital can be strengthened by targeted interactive interventions (Luthans *et al.*, 2014), with the potential for prolonged positive effects (Dello Russo and Stoykova, 2015). The said interventions may consist of (1) individual exercises with a focus on incorporating self-reflection and goal setting, as well as (2) group discussions (Luthans *et al.*, 2006; 2007). Specifically, self-reflection helps individuals to reflect on what might stop them from accomplishing their goals in order to anticipate, plan for and overcome potential obstacles. On the other hand, group discussions encourage positive thinking and vicarious learning through peer role modelling which leverages individuals' psychological resources in the form of social support. While psychological capital interventions may not yet be broadly integrated into EE programs, it is envisaged that EE already comprises elements of such interventions, such as reflectivity and group discussions involving peer role modelling (Massar *et al.*, 2020).

Moreover, recent studies have stressed the important role played by psychological capital in career decisions, including the choice of entrepreneurship (Salavou *et al.*, 2023; Villanueva-Flores *et al.*, 2023). In their experimental study, Georgiou *et al.* (2019) demonstrated that job seekers' success rate is greater when their psychological capital is higher. Correspondingly, Massar *et al.* (2020) highlighted the positive influence of individuals' psychological capital on EI and success. They add that, in addition to acquiring necessary knowledge and skills from EE, incorporating a psychological capital component may result in more sustainable positive outcomes and strengthen the likelihood to embark on entrepreneurship. In another study, Ephrem *et al.* (2019) deduced that the higher students' psychological capital, the stronger their intention to start a business. Furthermore, Baron *et al.* (2016) found that a high level of psychological capital leads to lower perceptions of stress among entrepreneurs. Hence, they

associated psychological capital with entrepreneurial propensity. In turn, Baluku *et al.* (2016) determined that entrepreneurs with higher psychological capital, in particular optimism and hope, are more likely to succeed than their counterparts. More recently, it was concluded that three of the dimensions of psychological capital (optimism, hope and resilience) lead to entrepreneurial intention (Villanueva-Flores *et al.*, 2023).

Reverting to hope, training here is based on helping and stimulating pragmatism through goal setting. The self-efficacy component is addressed through the well-known sources of belief namely active mastery (goal setting exercise); modelling or vicarious learning (sharing goals with other and making suggestions); social persuasion and positive feedback (providing positive reinforcement about goal achievement). Building resilience bodes well for activating cognitive, emotional and behavioral processes that can change an individual's perception of the influence of external conditions. It also affords them the ability to mentally reframe those circumstances. For optimism, the technique of rephrasing negative and self-debilitating thoughts is the basis for increasing individuals' positive expectations and attributions (Dello Russo and Stoykova, 2015).

By and large, psychological capital has been found to positively affect EI in different cultural contexts. Sebora and Tantiukoskula (2011) determined this among undergraduate students in the US, while Zhao *et al.* (2020) found a positive effect in China, although mediated by entrepreneurial capital. Ephrem *et al.* (2019) offer similar evidence of a positive link from the African context. Thus, a positive relationship between psychological capital and EI is foreseeable.

## *Hypotheses*

### *Self-Efficacy*

Self-efficacy is an important component of Bandura's (1977) social learning theory, and refers to a person's belief in his or her ability to perform a given task (Kristiansen and Ndarti, 2004). Scholars assert that self-efficacy is the result of undertaking challenging or risky tasks. It can be formed in childhood when children are encouraged to perform such tasks and praised for achieving positive results (Mauer *et al.*, 2017). In the entrepreneurship literature, entrepreneurial self-efficacy [or ESE hereafter] refers to the strength of an individual's belief in successfully performing the role of an entrepreneur (Baluku *et al.*, 2016; Onjewu *et al.*, 2023). Empirical research has demonstrated that ESE is an important factor in determining the strength of EI (Liñán *et al.* 2013; Schmitt *et al.*, 2018; Nowiński *et al.* 2019). It has also been suggested that, along with goal setting and goal commitment, ESE can increase the probability of entrepreneurial action (Wennberg *et al.*, 2013).

By the same token, prior research suggests that knowledge and awareness of entrepreneurship increase ESE and hence EI (Liñán *et al.*, 2013). To be sure, EE develops and enhances students' perception of leadership ability and may elevate ESE in the process (Henley *et al.*, 2017). Overall, there is overwhelming evidence that EE may contribute to EI by increasing self-efficacy (Nowiński *et al.* 2019; Yousaf *et al.* 2021), although this may depend on the type of educational intervention with practical courses yielding higher levels of intention (Piperopoulos and Dimov, 2015). Regardless of the educational approach observed, whether live case studies, business plans, vicarious learning from successful entrepreneurs, improvised activities or creative experiments (Souitaris *et al.* 2007; Wilson *et al.* 2007; Gielnik *et al.*, 2017; Hand *et al.*, 2020; Balachandra, 2019; Yar Hamidi *et al.*, 2008), EE has been found to enhance students' ESE. Therefore, it can be argued that:

*H1. The effect of entrepreneurship education on implementation entrepreneurial intention is mediated by self-efficacy*

### ***Optimism***

Optimism reflects one's expectation to experience good outcomes in life (Scheier and Carver, 1992). Optimists strive to do their best in a positive way and learn from good as well as bad experiences. In comparison, pessimists view failure as temporary and external instead of taking ownership of their shortcomings (Schueller and Seligman, 2008). In a qualitative study exploring EE programmes in prison, Patzelt *et al.* (2014) revealed that the former enhanced participants' predisposition to take and assume responsibility, believing in their ability to control and produce positive outcomes in their post-prison life. In a similar vein, taking a quantitative approach, Crane (2014) and Haddoud *et al.* (2022) ascertained the positive impact of EE on optimism among university students.

In the entrepreneurship literature, optimism has generally been considered as a unique determinant of entrepreneurial behavior. As Baluku *et al.* (2016) note, it [optimism] breeds confidence in positive outcomes, provides motivation for persistence and commitment, and plays a lead role in the decision to develop and implement entrepreneurial ideas. Furthermore, compared to entrepreneurs, non-entrepreneurs tend to be more pessimistic and worried about losing their source of security (Fraser and Greene, 2006). However, being overly optimistic may lead individuals to be unrealistic about task completion due to overconfidence and fallacy planning (Baron, 1998). Notwithstanding these negative consequences, Haddoud *et al.* (2022) suggest that optimism still has a positive effect on EII. Based on the above, it is hypothesized that:

*H2. The effect of entrepreneurship education on implementation entrepreneurial intention is mediated by optimism*

### ***Hope***

Hope denotes a ‘*sense of successful (a) agency (goal-directed determination) and (b) pathways (planning of ways to meet goals)*’ (Snyder *et al.*, 1991, p. 571). According to Magaletta and Oliver (1999), the difference between optimism and hope resides in outcome expectancy. Hope outcome expectancy is the result of one’s efforts, whereas optimism outcome expectancy is attained independently of these efforts. In the entrepreneurship literature, hope, as a driver of persistence, is an important aspect of psychological capital for entrepreneurial success (e.g., financial outcomes, entrepreneurs’ satisfaction and business survival). Hope is also a characteristic of successful entrepreneurs as it is likely to enhance the ability to set realistic goals, identify alternative paths, and therefore increase the commitment of entrepreneurs (Baluku *et al.*, 2016). While prior studies have not examined the impact of EE on hope as a distinct construct, some studies assert that psychological capital is positively affected by EE (Chevalier *et al.* 2022). Therefore, it is reasonable to predicate that:

***H3. The effect of entrepreneurship education on implementation entrepreneurial intention is mediated by hope***

### ***Resilience***

Resilience has garnered scholars’ attention as a social theory (Hayward *et al.*, 2010). It is defined as the ability to continue living a purposeful life after hardship or adversity (Tedeschi and Calhoun, 2004), or ‘*the positive psychological capacity to rebound, to ‘bounce back’ from adversity*’ (Luthans, 2002, p. 702). Highly resilient persons tend to be more effective in uncertain situations as they have the ability to adapt to change and stress (Coutu, 2002). Moreover, Baluku *et al.* (2016) state that resilience is an essential ingredient for nascent entrepreneurs to develop their new venture. In the same way, Fisher *et al.* (2016) believe that resilience is a reflection of hardiness which foreshadows entrepreneurial success. Furthermore, Korber and McNaughton (2018) stress the value of resilience to adaptability and transformability that could encourage individuals to undertake entrepreneurial activity.

Relatedly, Bullough *et al.* (2014) contend that aspiring entrepreneurs who believe in their ability to cope with stressful environments are significantly more likely to start a business. Individuals learn by experiencing small failures so that they are unfazed by future organizational conditions (Honig, 2004).

From an institutional perspective, mentoring and education provide individuals with support to enhance their resilience which in turn contributes to their entrepreneurial success (Korber and McNaughton, 2018). González-López *et al.* (2019) note that resilience can be enhanced through entrepreneurship training, mainly through active methods such as design thinking, exposing learners to difficulties and feelings of anxiety caused by time pressure and creative insecurity. From such negative exposure, students learn to manage and overcome difficulty, and thus develop new competencies that reflect resilience. Following this logic, it can be hypothesized that:

*H4. The effect of entrepreneurship education on implementation entrepreneurial intention is mediated by resilience*

## **METHOD**

To test the hypotheses, a third-party data collection firm [SmartSurvey] was commissioned to survey students in the UK. A total of 262 responses were returned. A panel was used to generate data through non-probability sampling. Non-probability sampling is common in entrepreneurship studies (Nowiński *et al.*, 2019; Haddoud *et al.*, 2022; Rahman *et al.*, 2023; Olarewaju *et al.*, 2023), due to the challenging nature of the discipline (Jensen and Luthans, 2006). Notwithstanding the generalisability limitations of this approach, researchers can ensure the appropriateness of participants (Nowiński *et al.*, 2019). All the variables observed were assessed using items sourced from extant studies. The measures for psychological capital were adapted from Luthans *et al.*'s (2017) psychological capital inventory and Seborá and Tantiukoskula's (2011) adapted version for entrepreneurship. For EII, this was conceptualised

using Gollwitzer's (1999) implementation intention paradigm and the instrument for measurement was extracted from Sniehotta *et al.* (2006). Specifically, EII reflects a specific plan detailing where, when and how the desired behavior (of starting a business in this case) will be performed (Fayolle and Liñán 2014). Lastly, EE was assessed through a composite construct asking respondents whether they had participated in the following: (1) entrepreneurship programmes, (2) courses, (3) workshops and training, (4) guest lectures, (5) competition and (6) simulation. Below, table 1 presents the main features of the sample in terms of gender, age, field, and level of study.

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Insert Table 1 about here  
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As shown in table 1, the proportion of female students was slightly higher than males. Moreover, in terms of age, 49.6% of students were less than 25 years old, while just over 50% were 26 years and older. As for the field of study, the vast majority of students were either enrolled in an economics or business major. Lastly, postgraduate students exceeded undergraduate students (64.4% vs. 35.6%). While this seems an unusual distribution, such proportions could be attributed to the nature of panel samples.

## ANALYSIS

To test the hypotheses, a Partial Least Squares Structural Equation Modelling (PLS-SEM) technique was adopted using WarpPLS (Kock, 2017). This variance-based linear regression approach was preferred here since Partial Least Squares is known to explain substantially higher variance in dependent variables (Hair *et al.*, 2017b).

### ***Measurement Model***

To validate the measurement model at the first-order level, the reliability and validity of all latent variables involved in the model are assessed. While reliability is verified through composite reliability and Cronbach's Alpha, validity is examined with the average variance

extracted (AVE) (for convergent validity), and the square roots of AVE (for discriminant validity). Furthermore, the individual reliability of all the indicators is checked with item loadings (Hair *et al.*, 2017a). After deleting several items due to initial collinearity issues, satisfactory indices were obtained. The appendix and table 2 depict the measurement model results confirming all indicators' loadings. Also, most square roots of AVE were higher than the diagonal, suggesting satisfactory discriminant validity. Regarding EE, the variable is measured as formative and hence its quality assessment is conducted through the significance of the indicators' weights and variance inflation factor [VIF]. Here, all items exhibited significant weights and had VIF values less than 5. Collinearity problems were also assessed for the remaining variables. As can be seen in table 1, one variable exceeded the recommended threshold of 5 suggesting a potential collinearity issue. However, this was still below the less conservative threshold of 10 (Kock, 2014). Full VIF values also suggest no major signs of common method bias that may undermine the results of this study (Kock and Lynn, 2012).

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Insert Table 2 about here  
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Finally, the psychological capital variable was also modelled as a second order construct following previous studies (Mahfud *et al.*, 2020). It was considered as a formative higher-order construct formed with reflective first-order indicators. As per Hair *et al.*'s (2017a) guidance, both indicator's weights and individual VIF should be checked when formative variables are investigated. In this case, all four indicators' weights were significant, while all VIFs were less than 5. Hence, the threshold was met.

### ***Structural Model***

The structural models for both first-order and second-order are assessed through the path coefficients ( $\beta$ ) and the *p*-values of the relationships hypothesised in the study. Figure 1 reports these values.

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Insert Figure 1 about here

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To begin with, figure 1 indicates that at the second order level, EE holds a significant influence on both psychological capital ( $\beta = 0.53^{***}$ ) and EII ( $\beta = 0.29^{***}$ ). In turn, psychological capital has a significant and positive influence on EII ( $\beta = 0.52^{***}$ ). Likewise, EE holds a significant and positive indirect influence on implementation intention ( $\beta = 0.27^{***}$ ), through psychological capital. Therefore, it can be concluded that psychological capital partially mediates the link between EE and EII.

As for the first-order level, it was found that EE significantly and positively affects all four dimensions of the psychological capital, namely hope ( $\beta = 0.49^{***}$ ), optimism ( $\beta = 0.47^{***}$ ), resilience ( $\beta = 0.47^{***}$ ) and self-efficacy ( $\beta = 0.52^{***}$ ). Here, the strongest influence was on self-efficacy, followed by hope, optimism, and then resilience. As for the influence of these factors on EII, the following results were noted. EII was affected by hope ( $\beta = 0.37^{***}$ ) and self-efficacy ( $\beta = 0.26^{***}$ ). Regarding the influence of the control variables, the findings revealed that age, gender, level and field of study held non-significant influences. In terms of the indirect effect, the results show that EE holds a positive significant indirect impact on EII ( $\beta = 0.37^{***}$ ). Moreover, when assessing the direct effect, the latter was also positive and significant ( $\beta = 0.28^{***}$ ). Hence, the presence of partial mediation is deduced. Overall, the proposed model explained 65% of the variance in EII. To surmise, H1 and H3 are accepted, while H2 and H4 are rejected. Table 3 presents the results from hypothesis testing.

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Insert Table 3 about here

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## DISCUSSION

Based on the integration of the social cognitive career theory (Lent *et al.* 1994, 2002) and the PsyCap lens (Luthans *et al.*, 2007), this research demonstrates that entrepreneurial education can have a positive impact on entrepreneurial implementation intentions via enhancing entrepreneurial self-efficacy (SCCT) and outcome expectation (PsyCap). Such an integrated approach offers more holistic insights explaining the mechanism by which education enhances career development.

This paper builds on earlier research on the outcomes of psychological capital (Luthans *et al.*, 2007), including studies on work-related outcomes (Avey *et al.*, 2010) and EI (Sebora and Tantiokuskola, 2011; Ephrem *et al.*, 2019; Salavou *et al.*, 2023). Our findings extend these previous studies by exploring how the relationship between EE and entrepreneurial career choices is mediated by psychological capital variables. First, a positive relationship is found between EE on EII. While its relationship with goal intention was previously established, with mixed results (Bae *et al.*, 2014; Paliwal *et al.*, 2022), little was known about its relationship with EII till now. In this sense, the current study provides novel evidence about its significant positive relationship with EII and, by the same token, addresses persistent calls for separating the two concepts when it comes to EII [goal vs implementation intentions] (Fayolle and Liñán, 2014; Krueger, 2017; Haddoud *et al.*, 2022). In this regard, there is a presumption that individuals who express EII have a greater likelihood to perform a behavior.

### ***Psychological Capital as a Mediator between EE and EII***

Psychological capital, as a second-order construct, was found to be a significant and positive mediator of the link between EE and EII. While minimal prior works examined this mediation, the current study confirms the positive role of EE in enhancing students' psychological capital.

In turn, the influence of psychological capital on EII was also demonstrated, consistent with Mahfud *et al.* (2020) who concluded that, in addition to leveraging positive attitudes, skills, and desires, EII requires the development of psychological capital.

Furthermore, based on the inherent finding on the role of psychological capital as an aggregate construct, it was expected that each of the first-order dimensions would mediate the EE - EII nexus in our study. Intriguingly, this was not the case. Although EE increased all four psychological capital dimensions, the EE - EII nexus was mediated by hope and ESE, yet the evidence for the influence of optimism and resilience did not materialize. Such findings are indeed surprising as although the role of self-efficacy is well acknowledged for entrepreneurial intent and for linking EE to EII (Onjewu *et al.*, 2022), the influence of hope is less known. Not only was this significant in the analysis, but it also constituted the strongest predictor of implementation intention while optimism and resilience played more of a trivial role. Next, an attempt is made to explain these intriguing findings.

### ***Hope... the missing link between EE and EII?***

Ephrem *et al.* (2019) state that, thus far, hope has courted little attention in the entrepreneurship literature. In this study, it has been shown that it [hope] plays an important role in mediating the influence of EE on entrepreneurial implementation intention. Not only is it shown that EE is effective for triggering students' hope to pursue entrepreneurship, the findings also highlight the importance of the psychological capital dimension for the development of entrepreneurial implementation intention. Now, it can be concluded that EII is shaped by hope and its two dimensions of (1) goal setting and (2) overcoming the challenges encountered in new venture development. As a trait, hope bestows individuals with the motivation to invest energy (Luthans and Youssef, 2004). It is also evident in individuals who are confident about the future and seek strategies to thrive in it (Ephrem *et al.*, 2019). Similarly, Zhao *et al.* (2020) posited that hope

(and self-efficacy) in particular will increase entrepreneurial passion which in turn is thought to drive EII (Haddoud *et al.*, 2022). Baluku *et al.* (2020) argued that hope impels individuals to develop their entrepreneurial goals and persist in pursuing them. Hence, it is inferred that hope engenders a positive, proactive approach to entrepreneurial activity which is particularly relevant in situations when individuals believe that the outcome depends on their own behavior (Gallagher and Lopez, 2009). Setting goals and staying the course is certainly helpful in the context of new venture creation. Different from optimism, hope involves taking responsibility for positive outcomes. Thus, positive expectation (optimism) shows a weaker connection to EI than proactive involvement in setting and achieving goals. Hope is the ability to turn dreams into reality and it is found to be the strongest mediator between EE programs and EII.

#### ***Self-Efficacy as a Mediator in the EE – EII Nexus***

The current findings confirmed the role of self-efficacy as a mediator in the influence of EE on EII. This corresponds with previous studies confirming self-efficacy both as an outcome of EE and a precursor to EI (Onjewu *et al.*, 2021; Nowiński *et al.*, 2019; Wardana *et al.*, 2020 and Hoang *et al.*, 2020). However, the novelty of the present findings dwells in the relationships determined with implementation intention rather than goal intention. Hence, it is confirmed that individuals' belief in their ability to become entrepreneurs will not only determine goal intention but also implementation intention, which is one step closer to action.

#### ***Optimism and Resilience: A Surprising Trivial Role***

This study revealed that neither optimism nor resilience mediate the influence of EE on students' EII. In fact, although EE was found to enhance both dimensions, in line with Haddoud *et al.* (2022) for optimism and (Gonzalez-Lopez *et al.*, 2019) for resilience, the immaterial role of both variables on EII was surprising and incongruous with prior studies linking them [optimism and resilience] to EI. To begin with, optimism is considered a source of confidence that motivates people to be persistent and committed to developing EI (Fraser and Greene,

2006; Baluku *et al.* 2016). Haddoud *et al.* (2022) found that higher levels of optimism provide individuals with a sense of control and superiority when facing challenging situations. Lindblom *et al.* (2020) provide evidence that optimism is associated with entrepreneurial success. Likewise, Baluku *et al.* (2019) show that greater optimism leads to enhanced levels of EI. Georgescu and Herman (2020) concluded that optimism (among other factors) increases students' intention to embark on entrepreneurial careers. Indeed, there has also been some indication of the trivial role of optimism. In a multi-country study, Giacomini *et al.* (2016) found that optimism held a positive and significant influence in a US sample exclusively, while for both Spanish and Indian students, the effect was of no consequence. In fact, in the UK, Dawson and Henley (2013) reported that being over-optimistic leads to a higher and faster rate of withdrawal from entrepreneurship.

To explain such a trivial role, it is argued that although individuals with high levels of optimism are likely to pursue new opportunities as they feel in control to successfully complete challenging tasks, pursuing such opportunities may also lead to cognitive overload and goal conflict. This is because they perceive new opportunities everywhere in their environment and become indecisive about which ones to pursue (Hmieleski and Baron, 2009). This prospect has negative implications for individuals' ability to exploit new opportunities and may diminish their perceived value. Hence, some forms of optimism and overconfidence may prevent or at least hold no positive influence on individuals when it comes to new business creation (Bernoster *et al.*, 2018). This is particularly true in the present study as implementation intention requires a degree of planning and addressing questions about the 'where, how and when' of entrepreneurship. Therefore, it can be concluded that while optimism could increase goal intention, when it comes to implementation intention, its importance tends to dwindle. Furthermore, the trivial role of optimism on EII could also be explained by the relationship

between the former and individuals' external locus of control. As Gallagher and Lopez (2009) argue, the role of optimism is greater when the expected outcome is dependent on third parties or external circumstances rather than on personal agency. On the contrary, the entrepreneurial process, as argued by effectuation theory (Reuber *et al.* 2016), warrants taking responsibility, emphasising the relevance of internal locus of control.

As for the extraneous role of resilience, the findings are, once more, at odds with previous studies indicating a positive and critical role (Bullough *et al.*, 2014; Monllor and Murphy, 2017). Proving the trivial role of resilience for EII may address Korber and McNaughton's (2018) call for researchers to consider the "negative" aspects of resilience when it comes to entrepreneurship. Nevertheless, the inherent findings do not reflect the negative consequences of resilience *per se*, but its less important role compared to the other psychological capital dimensions. The explanation for this incidence may reside in the "dark side" of resilience. Here, Mahdiani and Ungar (2021) explain that the role of resilience depends on the context in which the behavior is taking place. In fact, they question "whether every adverse context calls for a resilience response on the individual's side". By contrast, Mahdiani and Ungar (2021) argue that reduced negative emotional responses to challenging situations may actually translate into a lower propensity to act. In the context of entrepreneurship, one may argue that having a high resilience at the implementation stage could result in a lack of propensity to act upon implementing the entrepreneurial plan in terms of the 'where, how and when'. In other words, it is arguable that the lack of resilience will not prevent entrepreneurial plans from being implemented as a "negative" emotional reaction to the challenges faced by potential entrepreneurs. Rather, it will encourage them to act upon mitigating that challenge and proceeding with the behavior. Hence, in accord with Mahdiani and Ungar (2021), individual resilience may not be applicable in every situation.

To conclude, while resilience and optimism may be effective for triggering entrepreneurial goal intention, potentially they only play a trivial role at the stage of implementing those intentions. When aspiring entrepreneurs are at the implementation stage reflecting on the ‘where, how and when’ questions of their new venture creation, self-efficacy and hope will matter more.

## **CONCLUSION**

To recap, after weighing up the four psychological capital factors, it has been determined that only (1) hope and (2) ESE mediate the link between EE and EII. Although EE significantly and positively increases resilience and optimism, these two factors have no successive significant correlation with EII. Therefore, in the UK context, it can be concluded that EE is efficacious for improving the full set of individuals’ psychological capital. However, when it pertains to EII, only hope and ESE are subsequently useful for cultivating the resolve to launch a new venture. In effect, hope and ESE could constitute the missing psychological capital links in the EE-EI nexus.

### ***Theoretical Implications***

This study advances extant theory through an integrated SCCT-PsyCap approach to explain the impact of entrepreneurship education on entrepreneurial implementation intention. In this regard, it is shown that this influence manifests not only by enhancing entrepreneurial self-efficacy (SCCT), but also by shaping outcome expectation (PsyCap). These findings offer a more holistic theoretical perspective to fathom the EE-EI link by capturing cognitive aspects as well as attitudes towards outcome expectation.

Furthermore, the trivial roles of optimism and resilience are as important a finding as the imperativeness of hope and ESE. This suggests that hope could be regarded as another means

of expressing outcome expectation in social cognitive career theory. Yet, there is room to further investigate and understand whether optimism and resilience nurture other forms of entrepreneurial behavior. As Giacomini *et al.* (2016) alluded, the effect of optimism and overconfidence on EI depends on the context. Therefore, there is scope to verify this trivial role of optimism and resilience in the UK. To build on the net-effects approach taken here, these findings lend themselves to a configuration approach that can specify the recipe of psychological capital needed for implementation intention. This will also prove, once and for all, the utility in optimism and resilience in EII.

### ***Practical Implications***

The current evidence speaks directly to institutions invested in policymaking and the delivery of EE. Beginning with policymakers, UK agencies including the National Council for Graduate Entrepreneurship (NCGE), the Council for Industry and Higher Education (CIHE), and the National Endowment for Science, Technology and the Arts (NESTA) can reflect and adopt the results to set in motion new initiatives to close gaps in the country's 'starting a business', 'national entrepreneurship context' and EE indices. For centers of learning, the results prove, once more, the value of individuals' perceptual quality in producing entrepreneurial outcomes. The attention of early-stage, further and higher education establishments in the UK is called to consider designing and delivering EE that enhances hope and ESE. Content that specifically addresses these factors can be embedded in EE modules, competitions, workshops, simulations, and guest speaker interactions. When designing such new content and pedagogies it is recommended to draw upon the experience of psychological capital interventions to leverage experiences of this approach from other global contexts. New pedagogical approaches that nurture hope and ESE could also be recommended beyond the UK context. While such elements might be a valuable addition to entrepreneurship programs, they will require entrepreneurship faculty to develop new skills. Therefore, the agencies will do well to promote best practices

among entrepreneurship educators. Additionally, such interventions could be targeted at incubation programs where entrepreneurial implementation is at a more advanced stage.

### ***Limitations and Future Research***

This study ends by acknowledging limitations that may inform new research. First, the sample is only comprised of UK students, so the findings may not apply in countries with different academic and social conditions. Also, there is no supposition that the results represent the implementation intention of non-student groups. In this regard, future works ought to consider the role of education in shaping successful entrepreneurs' behavior and performance. Second, there were more postgraduate than undergraduate students in the panel data procured. While this is understandable in the current context, future studies can self-distribute their surveys to remedy any likely disproportion. Third, due to being a cross-sectional study, the links in the structural model are mainly associations. Caution should be exercised in inferring causality and endogeneity cannot be ruled out. On this basis, future research can take a longitudinal approach to evidence causation. Also, as previously intimated, researchers can employ configurational techniques to demonstrate causation while determining the combination of psychological capital factors that are optimal for yielding EII. Lastly, the findings are based on a non-probability sample sourced from a third-party panel and this poses generalizability concerns. New studies are invited to replicate the path model using probabilistic sampling methods.

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## List of Tables

**TABLE 1. Samples Characteristics**

	<b>Variable</b>	<b>Valid Percent</b>
<b>Gender</b>	Male	44.4
	Female	55.6
<b>Age</b>	Less than 20	6.5
	20-22	18.3
	23-25	24.8
	26-28	17.6
	28-30	11.5
	More than 30	21.4
	<b>Field of Study</b>	Humanities and Religious Studies
Social Sciences (excluding Economics and Business)		11.5
Economics and Business		69.6
Science (Mathematics, Physics, Chemistry, Theoretical Informatics)		4.6
Engineering and Technology		5.0
Life and Natural Sciences		1.2
Medical and Health Sciences		1.9
Art		2.3
<b>Level of Study</b>	Bachelors	35.6
	Diploma	13.8
	Masters	39.5
	PhD	11.1

**TABLE 2. Measurement Model Validation**

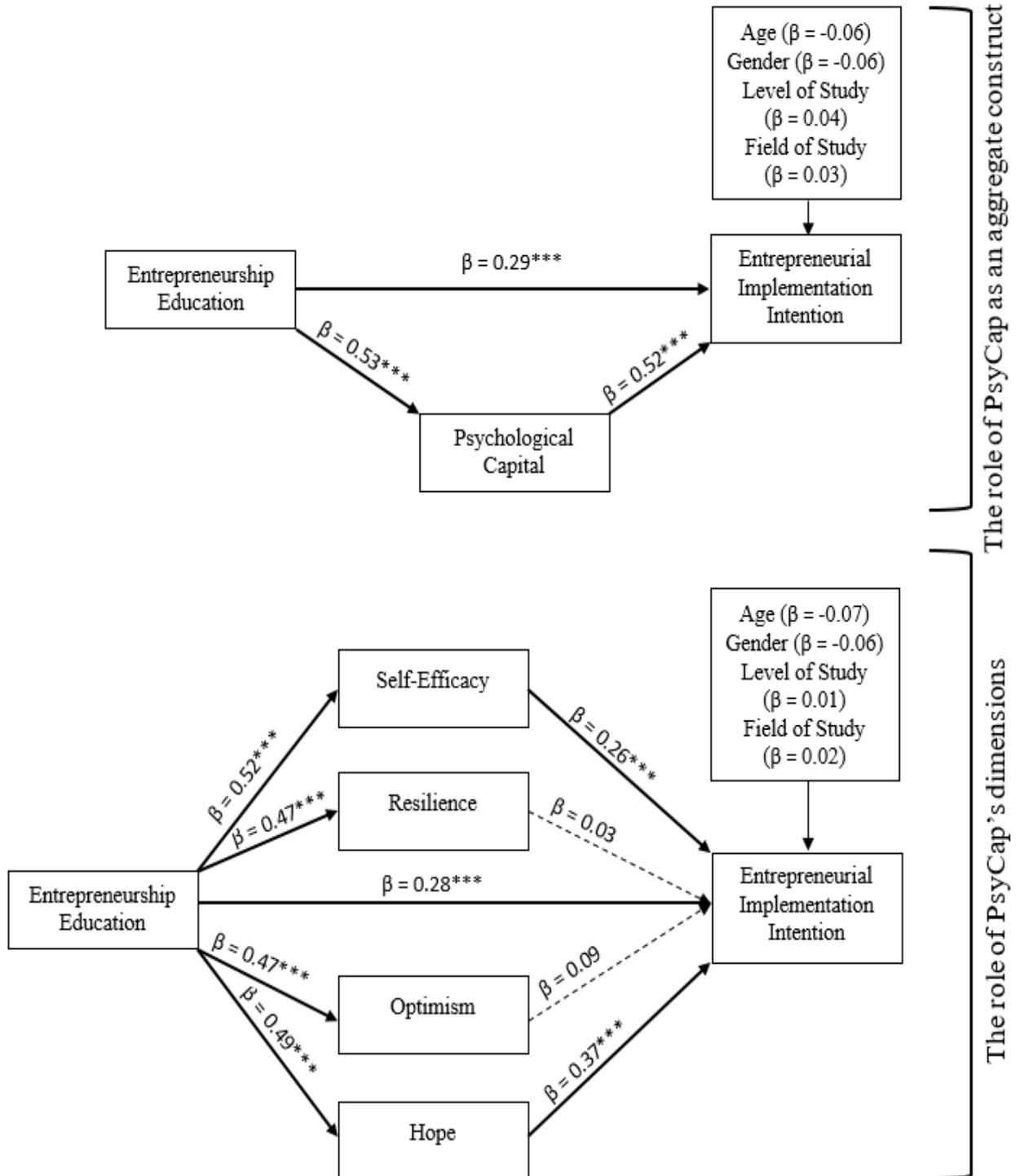
	<b>EE</b>	<b>Self-Efficacy</b>	<b>Resilience</b>	<b>Optimism</b>	<b>Hope</b>	<b>EII</b>
<b>Composite Reliability</b>	<i>Formative</i>	0.936	0.895	0.886	0.898	0.956
<b>Cronbach Alpha</b>	<i>Formative</i>	0.917	0.823	0.806	0.848	0.930
<b>AVE</b>	<i>Formative</i>	0.708	0.739	0.721	0.688	0.877
<b>VIF</b>	1.563	4.544	4.254	3.975	5.073	2.339

**TABLE 3: Hypothesis Testing**

<b>Hypotheses</b>	<b>Test</b>
<i>H1. The effect of entrepreneurship education on implementation entrepreneurial intention is mediated by self-efficacy.</i>	Accepted
<i>H2. The effect of entrepreneurship education on implementation entrepreneurial intention is mediated by optimism.</i>	Rejected
<i>H3. The effect of entrepreneurship education on implementation entrepreneurial intention is mediated by hope.</i>	Accepted
<i>H4. The effect of entrepreneurship education on implementation entrepreneurial intention is mediated by resilience.</i>	Rejected

## List of Figures

Figure 1: Structural Models



## Appendix: Factor loadings

Items	Loadings
EE	0.860
EE	0.882
EE	0.881
EE	0.812
EE	0.837
Self-Efficacy	0.823
Self-Efficacy	0.816
Self-Efficacy	0.840
Self-Efficacy	0.834
Self-Efficacy	0.857
Self-Efficacy	0.877
Resilience	0.817
Resilience	0.887
Resilience	0.873
Optimism	0.840
Optimism	0.844
Optimism	0.862
Hope	0.861
Hope	0.851
Hope	0.752
Hope	0.850
Implementation Intention	0.920
Implementation Intention	0.946
Implementation Intention	0.944