

DO DARK PERSONALITY TRAITS ADD TO THE ENTREPRENEURIAL INTENTION PREDICTING ABILITY OF THEORY OF PLANNED BEHAVIOUR? AN EMPIRICAL STUDY

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Abstract

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Antecedents of individuals' intentions have received growing consideration in entrepreneurship research. The purpose of the present study is to analyse the impact of dark personality traits on entrepreneurial intention, within the context of the theory of planned behaviour (TPB). A questionnaire-based online survey was conducted on 520 undergraduate university business students at a Greek public university. Data analysis was implemented through structural equation modelling (SEM). Findings indicate that perceived behavioural control impacts entrepreneurial intention and that attitude has a direct impact on entrepreneurial intention through the dark triad variable. The implications of the findings are significant both for academic policymakers as well as for educators, since the systematic fostering of students' entrepreneurial intention could provide empirical evidence and help formulate policies that inspire them to choose entrepreneurship as a career option. Findings will contribute to the understanding of the relationship between dark personality traits, entrepreneurial intention, and the TPB, providing valuable insights for entrepreneurship education to identify individuals who are more likely to become successful entrepreneurs. Finally, findings could add to the theoretical framework on the impact of personality traits on entrepreneurial intention and behaviour and to the use of TPB in predicting entrepreneurial outcomes.

Keywords: Perceived Behavioural Control, Attitude, Dark Triad, Entrepreneurial Intention

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1. INTRODUCTION

There is a common view that entrepreneurship plays a crucial role in promoting economic and social development, while it also reduces unemployment and leads to social welfare (Wu et al., 2019). For that reason, entrepreneurs are viewed as the primary agents of economic shift and growth, who combine all the needed resources and recognise opportunities to create socioeconomic value (Mwatsika et al., 2018; Tsaknis & Sahinidis, 2020; Xanthopoulou & Sahinidis, 2022). Although entrepreneurs' personalities might be seen positively or negatively, it should be mentioned that researchers comprehend the intricate process by which personalities form behaviours and affect results (Klotz & Neubaum, 2016). Researchers from various scientific fields are becoming increasingly interested in searching for more information concerning students' entrepreneurial intentions (Cao & Ngo, 2019) as intention is considered the main predictor of entrepreneurial behaviours (Ajzen, 1991; Adeel et al., 2023). The research gap in this context is the lack of studies that have examined the role of the dark triad personality traits (Machiavellianism, narcissism, and psychopathy) in the formation of a new venture. While there have been numerous studies and meta-analyses that have investigated the role of personality in entrepreneurial intention and success, very few have specifically focused on the dark triad traits (Brandstätter, 2011; Do & Dadvari, 2017; Furnham et al., 2013; Hmieleski & Lerner, 2016; Zhao & Seibert, 2006). This is an important gap in the literature as these traits have been shown to be associated with unethical and exploitative behaviours, and their role in entrepreneurship warrants further investigation.

The dark triad comprised by Machiavellianism, narcissism, and subclinical psychopathy traits, has been mainly studied in management journals, mostly within the context of leadership and in an attempt to explain corporate success among other organisational outcomes (Bongiovi, 2017; Cai et al., 2021). Although it is viewed as a source of dysfunctional behaviour, the dark triad can also correlate with desirable outcomes, when as stated by Do and Dadvari (2017), Machiavellians are achievement-oriented and goal-focused, narcissists are creative and identify and seize opportunities and psychopaths strive to achieve recognition as intelligent and charismatic leaders.

The purpose of this paper is to investigate the impact of the dark triad on entrepreneurial intention, along with its antecedents, perceived behavioural control, and personal attitude on entrepreneurial intention. The present study builds on this perspective by asking: *Does perceived behavioural control and personal attitude affect entrepreneurial intention? What is the effect of dark personality traits on entrepreneurial intention?* (Do & Dadvari, 2017; Hmieleski & Lerner, 2016).

The present research has implications for how personality and behavioural factors are conceptualised in the entrepreneurship literature. The contribution of the study lies in several points. First, it adds to the present literature on entrepreneurial intention and its antecedents, focusing on individuals with negative (dark) personality traits which have a strong impact on peoples' intention to launch a new venture and make

everyday decisions. As mentioned, there are only a few studies on these negative personality traits and their impact on predicting entrepreneurial intention. Furthermore, the results could be useful for academic policymakers in designing entrepreneurship programs with a more strategic focus, and for educators to recognise students with those traits and help them to be effective in achieving their goals with proper educational and teaching methods.

The present research is structured as follows. Section 2 provides a detailed review of the literature on the topic, followed by a description of the research methods in Section 3. The authors present their findings in Section 4 and discuss their implications in Section 5. Section 6 includes the main concluding remarks with a summary of the main findings and suggestions for future research.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

A commonly accepted definition of entrepreneurial intention is that it refers to the recognised belief of an individual intending to launch a new business activity (Mwatsika et al., 2018). There are many definitions of entrepreneurial intention. For instance, Liñán and Chen (2009) define entrepreneurial intention as "a psychological construct reflecting the individual's conscious, internal evaluation and motivation to engage in entrepreneurial behaviour" (p. 595), while according to Shirokova et al. (2016) "Entrepreneurial intention is a motivational construct that reflects the individual's willingness to start a new business venture" (p. 210). Entrepreneurship studies mainly search for the entrepreneur's traits, the motivations and determinants of entrepreneurship, and the processes for establishing new enterprises (Mwatsika et al., 2018).

Entrepreneurial intention (EI) precedes entrepreneurial behaviour and is affected by several factors. According to the theory of planned behaviour (TPB) (Ajzen, 1991), three factors mainly impact peoples' entrepreneurial intention:

1) Entrepreneurial or personal attitude (PA), which refers to the attitude towards entrepreneurship.

2) The subjective norms (SN), i.e., the perception that the decision to establish a new business is influenced by others.

3) The perceived behavioural control (PBC) referring to the subjective perception of the feasibility of undertaking a new venture creation (Ajzen, 1991; Liñán & Fayolle, 2015; Shapero & Sokol, 1982).

In this study, the TPB factors examined are perceived behavioural control and attitude, not including subjective norms on which findings are inconsistent in much of the relevant literature and appear to offer little information in explaining entrepreneurial intention variation (Do & Dadvari, 2017). For many researchers (Littunen & Stenholm, 2017; Hoang & Gimeno, 2010; Jonason & Krause, 2013) dark personality traits such as Machiavellianism, narcissism, and psychopathy have been found to have an impact on entrepreneurial intention. The following is an explanation of these factors and the relevant research hypotheses that arise:

Perceived behavioural control: Is the individual's subjective assessment of the perceived ease or difficulty of carrying out behaviour and includes any anticipated obstacles or supportive circumstances (Ajzen, 1991; Liñán & Chen, 2009). If the individuals think that they cannot successfully complete any duties related to the beginning of a new venture, their intention to move forward decreases (Ajzen, 1991; Liñán & Fayolle, 2015). There are many findings that reveal is a statistically significant impact of perceived behavioural control on peoples' intention to be self-employed. Similarly, other findings underline the importance of perceived behavioural control as one of the most crucial predictors of entrepreneurial intention (Fischer & Karl, 2022; Vamvaka et al., 2020). Individuals, who show high PBC scores, choose entrepreneurship as a career instead of working for others (Utamin, 2017). Taking these into account, we can hypothesise that:

H1: Perceived behavioural control (PBC) has a positive relationship with entrepreneurial intention (EI).

Attitude: An attitude means a positive or a negative inclination towards a specific behaviour and is determined by personal beliefs about the outcome of behaviour (Vizano et al., 2021). Thus, individuals with a strong belief that the performance of this behaviour will result in positive results, they will show a positive attitude towards it. On the contrary, a person who strongly believes that the results will be negative, he/she will have a negative attitude towards the behaviour. The degree to which a person anticipates the new business's formation to have favourable results reflects their intention to start it (Krueger & Carsrud, 1993; Liñán & Fayolle, 2015). In other words, many researchers support that attitude has a positive and statistically significant relationship with entrepreneurial intention (Krueger & Carsrud, 1993; Sahinidis et al., 2021). From the above mentioned, we suggest that:

H2: Entrepreneurial/personal attitude (PA) will positively affect entrepreneurial intention.

Subjective norms: The belief that an important individual or group of people will support a particular behaviour (Rahman et al., 2022). In other words, indicate the level to which said individuals approve or reject a particular behaviour and the degree to which particular individuals' motivations conform to their preferences. Supporting important people is often a function of the general social impact (Santos & Liguori, 2019). It is more likely for the individual to follow the beliefs of important people if it has strong motivations to comply with them (Ajzen, 1991; Liñán & Chen, 2009). There is inconsistency regarding if subjective norms are a significant indicator of entrepreneurial intentions or not. Many scholars have found no statistically significant relationship between this factor and entrepreneurial intentions or have indicated conflicting results (Autio et al., 2001; Kolvereid, 1996; Kruse et al., 2019; Ashari et al., 2021; Mohd Noor et al., 2021), however in this study and in other studies, subjective norms have not taken into consideration in predicting entrepreneurial intention (Do & Dadvari, 2017).

Dark personality: Dark personality traits are a set of non-clinical, but socially unpleasant, traits that are related to each other (Jonason & Webster, 2010). The dark triad (DT) refers to Machiavellianism, narcissism, and psychopathy. The non-clinical forms of Machiavellianism, psychopathy, and narcissism, and are moderately related and share commonalities with "coldness", manipulation, and self-centeredness (Brownell et al., 2021; Sa et al., 2020; Qin et al., 2022). The "dark triad" is the middle ground between normal personality and clinical mental behaviours (Harms & Lebreton, 2014). Jonason and Webster's (2010) study suggests that dark personality traits can be measured on a 12-item scale called the dirty dozen scale.

Machiavellianism: Machiavellianism as a term has its roots in the Italian politician of the 16th century, the diplomat Niccolò Machiavelli, who was also the author of the book titled "The Prince". His book is considered by many as the first and among the most-read handbooks of leadership (Graham, 1996) due to the extensive use of realistic and in some cases cynical advice on how to gain and maintain power over other people (Hoang et al., 2022). Individuals with high scores on this trait have a great desire for wealth, power, and competition and are motivated by the belief that the ends justify the means (Zettler & Solga, 2013). They have also a strong desire to win in every situation (Buckels et al., 2013; Hmieleski et al., 2008). They typically choose highly competitive professional occupations because they perform better in unstructured work environments where decisions and power are required (Gable et al., 1992). If entrepreneurship is successful, they will quickly amass substantial wealth and influence, therefore it might be one of the finest ways for them to accomplish these goals. Machiavellians are highly adaptable and have the ability not to reveal their real intentions and prejudices against others. This trait is more prevalent in entrepreneurs who make more strategic judgments. Finally, Machiavellians have a propensity to influence others, make unethical choices, and even gain an advantage at the expense of others (Buckels et al., 2013; Wu et al., 2019).

Narcissism: Grandiosity, self-love, and inflated self-views are the main components of the relatively consistent personality trait known as narcissism (Hmieleski & Lerner, 2016; Wu et al., 2019). There are three main components of Narcissism: the self, interpersonal relationships, and self-regulatory strategies (Campbell et al., 2011). Narcissists are characterised by "specialness", positivity, and uniqueness, vanity, a sense of entitlement, and a desire for power and esteem. Their relationships can range from exciting and engaging to manipulative and exploitative. They frequently use narcissistic coping mechanisms to preserve inflated self-views (Campbell et al., 2011). Narcissists have a desire to lead a fast-paced lifestyle, avoiding the necessity to start at the bottom and steadily advance up the corporate ladder. Narcissism has been found to be positively correlated with entrepreneurial intention because entrepreneurship has become a coveted career choice (Hmieleski & Lerner, 2016; Campbell et al., 2011; Leung et al., 2021). Narcissism can lead people to be self-employed, achieve self-fulfillment, and attain positions of authority, power, and self-admiration

(Yu et al., 2020). Several studies have found that entrepreneurs are more likely to be narcissistic than the general population (Resick et al., 2009; Liu et al., 2021; Mathieu & St-Jean, 2013). Although personality academics describe narcissism as the degree to which an individual has an inflated sense of self and continually works on reinforcing self-view, clinical scholars believe that narcissism is pathologically tied to personality disorder (Obschonka et al., 2013; Campbell et al., 2004; Gerstner et al., 2013). According to existing literature, narcissism is fundamental to entrepreneurship, thus anyone hoping to succeed in a start-up should have a healthy dose of it (Judge et al., 2006).

Psychopathy: It is characterised by deception, ruthlessness, and a quest for stimuli (De Vries, 2004). Psychopaths struggle with their feelings towards emotions. Due to this flaw, they are indifferent to loss, risk, or danger, which lessens or completely removes the risk-suppression caused by failure anxiety (Crysel et al., 2013; Sahinidis et al., 2021; Wu et al., 2019). They really do not like social norms and they show a great willingness to oppose the status quo (Morgan & Sisak, 2016). Psychopaths are smart, charming, and interesting people, “successful” in top management. Successful psychopaths typically balance their antisocial and impulsive behaviour with a greater sense of responsibility, which allows them to function reasonably successfully inside an organization. Therefore, having a high psychopathy level may make someone a desirable leader in start-ups (Wu et al., 2019). Machiavellianism, narcissism, and psychopathy are personality traits that are more prevalent in people than in the general population. These people tend to be self-promoters and are drawn to careers in entrepreneurship because of their potential for status, power, prestige, and wealth (Mathieu et al., 2013). Therefore, the hypothesis derived from the literature is that:

H3: Dark personality will positively impact on entrepreneurial intention (EI).

Studies examining the relations between dark triad and entrepreneurial attitude are scarce to this day, creating thus a gap in our understanding of what kind of relationship there is, if any (Do & Dadvari, 2017). It is argued that the level of attention an individual dedicates on something is influenced by his/her attitude towards it. Dark personality contributes to the attitude a person adopts and people with dark personality traits understand the future as something unpredictable and uncertain, and they tend to receive satisfaction from situations that have short-term results. As stated by some authors they adopt a fast-life strategy and they are more likely to be self-employed (Do & Dadvari, 2017; Hmieleski & Lerner, 2016). Dark triad significantly impacts on the entrepreneurial intention, as individuals with dark personalities are more likely to attempt to launch a new venture (Hmieleski & Lerner, 2016). Similarly, other scholars also pointed that dark traits positively affect entrepreneurial development and entrepreneurial intentions (Cai et al., 2021; Resick et al., 2009; Liu et al., 2021; Boddy, 2006; Kraus et al., 2018).

H4: Entrepreneurial/personal attitude (PA) will be positively associated with dark personality.

Currently, there are few relevant studies proposing a model that describes the way that

perceived behavioural control affects peoples' intention to be entrepreneurs and the relationship between attitude, dark personality traits, and entrepreneurial intention with the use of structural equation modelling (Do & Dadvari, 2017). Taking the above gaps into consideration, this paper is aspiring to give more light to the literature on exploring these relationships and shedding some more light on them.

3. RESEARCH METHODOLOGY

To analyse the extant literature, a thorough search was conducted from online databases, journals, and review publications covering the scope of this study. After the determination of the initial aim and focus of the research and given its complexity, the questionnaire method was considered as appropriate to answer the questions raised. The participants of the study responded to a questionnaire using a 7-point Likert scale via Google Forms. Using a 7-point Likert is suitable for entrepreneurial intention research because it provides a range of responses that allows for more nuanced measurement of attitudes and intentions. Using a 7-point Likert scale for entrepreneurial intention research can be more suitable than using a 5-point Likert scale because it allows for more nuanced and precise measurement of attitudes and intentions. A 7-point scale also provides more response options than a 5-point scale, which can help to capture more subtle differences in responses and reduce response bias.

To ensure the confidentiality and anonymity of the respondents, ethical practices were used in all stages of the research (collection, analysis, and data reporting) (Zia et al., 2020). The current sample is comprised of 520 undergraduate students at a Greek University from a class of 800 students who attended an entrepreneurship course with a response rate of 62.65 per cent. The sample includes 211 males and 309 females aged 18 to 25. As there are limited resources available, the sample was a convenience one. The number of sample however allows reliable statistical analyses and generates valuable conclusions. It is unclear what students think about entrepreneurship. Studying students' perceived behavioural control, personal attitudes, and their entrepreneurial intention, while taking into consideration their dark personality traits is an emerging phenomenon (Lê & Schmid, 2022; Do & Dadvari, 2017). Students' intentions of entrepreneurship are being examined to provide empirical data that can be used to develop policies that will inspire university students to become entrepreneurs. To determine the relationship between the dark triad and entrepreneurial studying business, a 7-point Likert scale questionnaire method was used. The questionnaire includes:

- *Four (4) elements for Machiavellianism* (I tend to manipulate people to achieve what I want, I've lied or used deceit to acquire what I wanted, and I tend to take advantage of others for my own gain. I tend to lack regret, I tend to be callous or insensitive, I tend to not be overly concerned with the morality of my actions, and I tend to be cynical, which are the four indicators of psychopathy).

• *Four (4) items for narcissism* (I frequently desire the admiration and attention of others, anticipate special treatment from them, and pursue positions of power or status).

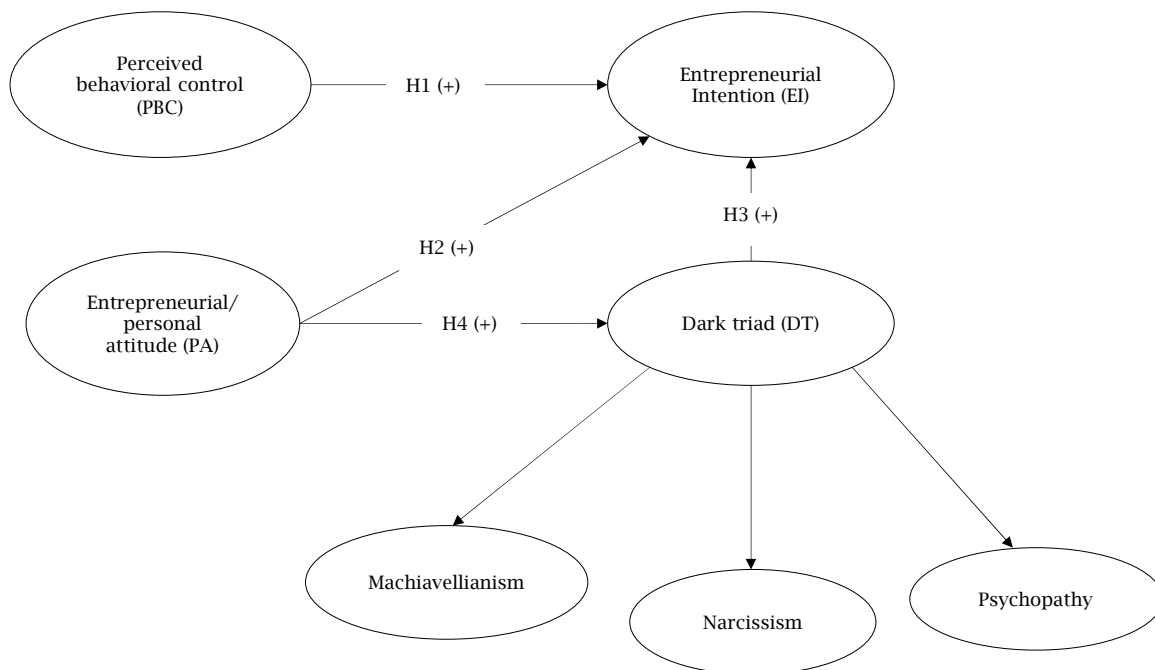
• *Six (6) items for entrepreneurial intention* (I will do whatever it takes to establish and operate my own firm; becoming an entrepreneur is my professional ambition; I am determined to launch my own company in the future; I am seriously thinking about launching my own company; I aim to launch a business in the future) (Jonason & Webster, 2010).

The duration of the data collection was from October 17 to January 11, 2020. The questionnaire items were based on a thorough review of the relevant literature on entrepreneurial intention and the factors that influence it (Sahinidis et al., 2021; Glanz et al., 2015; Mwatsika et al., 2018; Armitage & Conner, 2001; Fishbein & Ajzen, 2010; Asimakopoulos et al., 2019; Grijalva et al., 2015;

Sahinidis et al., 2020; Kautonen et al., 2015; Iyayi & Obeki, 2018b; Jones & Paulhus, 2014; Jonason et al., 2013).

Figure 1 below presents the hypothesised model to be tested. Structural equation modelling (SEM) was used to test its empirical validity (Guerrero & Marozau, 2022). Before incorporating the measures into the research model, the data analysis used a two-phase approach recommended by Anderson and Gerbing (1988, as cited in Gefen et al., 2000) to evaluate their validity and reliability. The measuring model is analysed in the first phase, and the structural relationships between latent constructs were examined during the second phase. The R-4.0.2 statistical software was used for the statistical analysis. A recursive method was used to eliminate non-significant path coefficients in each iteration until all coefficients were significant at least at a 95 per cent significance level.

Figure 1. Hypothesized model



Source: Authors' elaboration.

4. RESULTS

The calculation of internal consistency reliability, as well as the convergent and discriminant validity of the study constructs, reflects the strength metrics employed for assessing the above model (Anderson & Gerbing, 1988). The reliability and validity statistics for the current sample are quite satisfactory. To begin, Table 1 indicates that the loadings for all indicators in the final measurement model are greater than 0.7, which is a standard cut-off value for keeping them (Fornell, 1985). The indicators PA1 and DT2 were removed from the study because their loadings were less than 0.7, and the proportion of the remaining indicator's variation explained by the PA and DT constructs, respectively, was not

significantly higher when these indicators were retained in the model. The description of the following indicators can be found in Table 2 and the related questions can be found also in Appendix 1.

Cronbach's alpha, Dillon-Goldstein's rho, and the first and second eigenvalues have also been calculated to further evaluate reliability (Table 3). Both Cronbach's alpha and Dillon-Goldstein's rho are greater than 0.7 for all constructs (except Cronbach's alpha for DT), confirming that all indicators are reflecting, to an adequate extent, the latent variable that they are associated with. Similarly, the first eigenvalue is "much more" larger than 1 whereas the second eigenvalue is smaller than 1 for all constructs.

Table 1. Indicators' loadings (bold numbers) and cross-loadings

Constructs	Indicators	Loadings and cross-loadings						
		PBC	PA	DT	Mach	Psych	Nar	EI
Perceived behavioural control (PBC)	PBC1	0.87	0.51	0.20	0.10	0.01	0.22	0.50
	PBC2	0.88	0.49	0.19	0.10	0.02	0.24	0.52
	PBC3	0.84	0.43	0.22	0.15	0.01	0.26	0.43
	PBC4	0.74	0.30	0.18	0.08	0.05	0.07	0.40
	PBC5	0.83	0.36	0.25	0.15	0.08	0.21	0.45
Entrepreneurial/personal attitude (PA)	PA2	0.47	0.87	0.22	0.17	0.08	0.35	0.69
	PA3	0.39	0.83	0.09	0.03	(0.04)	0.19	0.62
	PA4	0.41	0.90	0.18	0.13	0.03	0.27	0.67
	PA5	0.49	0.88	0.16	0.14	0.04	0.22	0.72
Dark triad (DT)	DT1	0.16	0.12	0.80	0.63	0.43	0.36	0.15
	DT3	0.24	0.20	0.81	0.40	0.32	0.57	0.24
Machiavellianism (Mach)	Mach1	0.17	0.12	0.51	0.82	0.41	0.46	0.12
	Mach2	0.02	0.10	0.55	0.85	0.52	0.34	0.09
	Mach3	0.17	0.13	0.55	0.87	0.57	0.34	0.17
Psychopathy (Psych)	Psych1	0.05	0.03	0.43	0.53	0.84	0.24	0.06
	Psych2	(0.01)	0.01	0.36	0.49	0.83	0.21	0.01
	Psych3	0.05	0.05	0.31	0.38	0.71	0.20	0.07
Narcissism (Nar)	Nar1	0.22	0.31	0.47	0.38	0.19	0.90	0.23
	Nar2	0.23	0.24	0.57	0.44	0.29	0.92	0.22
	Nar3	0.20	0.26	0.50	0.36	0.24	0.87	0.24
Entrepreneurial intention (EI)	EI1	0.52	0.69	0.26	0.15	0.08	0.25	0.85
	EI2	0.48	0.75	0.23	0.16	0.06	0.24	0.90
	EI3	0.50	0.73	0.21	0.14	0.06	0.26	0.93
	EI4	0.52	0.66	0.20	0.10	0.03	0.22	0.92
	EI5	0.51	0.68	0.22	0.14	0.06	0.22	0.92
	EI6	0.48	0.72	0.18	0.12	0.05	0.21	0.92

Source: Authors' elaboration.

Table 2. Description of the indicators

Indicators	Description
PBC1	1st question for perceived behavioural control (PBC)
PBC2	2nd question for perceived behavioural control (PBC)
PBC3	3rd question for perceived behavioural control (PBC)
PBC4	4th question for perceived behavioural control (PBC)
PBC5	5th question for perceived behavioural control (PBC)
PA2	2nd question for personal attitude (PA)
PA3	3rd question for personal attitude (PA)
PA4	4th question for personal attitude (PA)
PA5	5th question for personal attitude (PA)
DT1	1st question for dark triad (DT)
DT3	3rd question for dark triad (DT)
Mach1	1st question for Machiavellianism (Mach)
Mach2	2nd question for Machiavellianism (Mach)
Mach3	3rd question for Machiavellianism (Mach)
Psych1	1st question for psychopathy (Psych)
Psych2	2nd question for psychopathy (Psych)
Psych3	3rd question for psychopathy (Psych)
Nar1	1st question for narcissism (Nar)
Nar2	2nd question for narcissism (Nar)
Nar3	3rd question for narcissism (Nar)
EI1	1st question for entrepreneurial intention (EI)
EI2	2nd question for entrepreneurial intention (EI)
EI3	3rd question for entrepreneurial intention (EI)
EI4	4th question for entrepreneurial intention (EI)
EI5	5th question for entrepreneurial intention (EI)
EI6	6th question for entrepreneurial intention (EI)

Source: Authors' elaboration.

Table 3. Unidimensionality of indicators

Constructs	C.alpha	DG.rho	eig.1st	eig.2nd
Perceived behavioural control (PBC)	0.89	0.92	3.47	0.61
Entrepreneurial/personal attitude (PA)	0.89	0.93	3.04	0.43
Dark triad (DT)	0.46	0.79	1.30	0.70
Machiavellianism (Mach)	0.80	0.88	2.15	0.48
Psychopathy (Psych)	0.71	0.84	1.89	0.65
Narcissism (Nar)	0.88	0.92	2.41	0.35
Entrepreneurial intention (EI)	0.96	0.97	4.95	0.43

Source: Authors' elaboration.

Both the average variance extracted (AVE) and the correlations between the constructs can be used to evaluate the convergent and discriminant validity

of the constructs (Guerrero & Marozau, 2022). The AVE of each construct in the first scenario calculates the percentage of variance in the indicators

explained by the construct. This value is suggested to be higher than 0.50 by Fornell and Larcker (1981), Roldán and Leal (2003) and Gefen et al. (2000), indicating that their construct accounts for more

than half the variation of the indicators. This requirement is met in our case for all constructs (Table 4).

Table 4. Mean, standard deviation, and AVE of study variables

Constructs	Mean	Std. Dev.	AVE
Perceived Behavioural Control (PBC)	4.18	1.18	0.69
Entrepreneurial Attitude (PA)	5.46	1.24	0.76
Dark Triad (DT)	2.77	1.43	0.65
Machiavellianism (Mach)	2.56	1.41	0.72
Psychopathy (Psych)	2.21	1.12	0.63
Narcissism (Nar)	3.81	1.61	0.80
Entrepreneurial Intention (EI)	4.77	1.58	0.82

Source: Authors' own work.

However, the discriminant validity of the AVE is evaluated by contrasting it with the correlations between the constructs. The square root of the AVE of each indicator must be greater than the correlation of this construct with all others for discriminant validity to be sufficient (Fornell, 1985; Roldán & Leal, 2003). In this regard, Table 4 displays the relationships between the constructs as well as the square root of the AVE values along the main diagonal. As can be seen, the predetermined condition is satisfied in every case, hence it is safe to say that the discriminant validity of those notions is

sufficient. The matrix of loadings and cross-loadings can also be used to evaluate discriminant validity. Items should strongly correlate with their own construct rather than any other, showing that respondents believe them to be part of that construct (Fornell & Larcker, 1981).

In Table 5, a matrix of loadings and cross-loadings has been calculated in this sense. As is evident, measuring items are reliable to reflect the related constructs since cross-loadings of each item to other constructs are always lower than the loadings with their own construct.

Table 5. Discriminant validity assessment

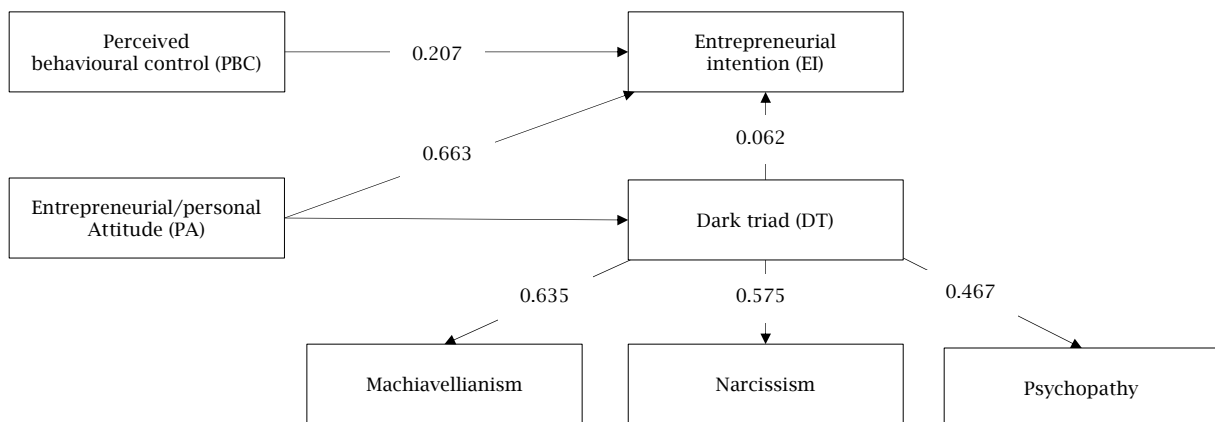
Constructs	PBC	PA	DT	Mach	Psych	Nar	EI
PBC	0.83						
PA	0.51	0.87					
DT	0.25	0.19	0.81				
Mach	0.14	0.14	0.63	0.85			
Psych	0.04	0.03	0.47	0.59	0.79		
Nar	0.24	0.30	0.58	0.45	0.27	0.90	
EI	0.55	0.78	0.24	0.15	0.06	0.26	0.91

Source: Authors' elaboration.

The suggested model's hypothesised relations between constructs were verified using the partial least squares method. The outcomes of our model are shown in Figure 2. As can be seen, this data largely supports the main entrepreneurial intention model. Through the use of a bootstrap resampling

technique with 500 replications, the significance of the routes that were part of the suggested model was examined. The significance of the structural routes was assessed along with the squared multiple correlations of all endogenous latent variables and EI in the initial analysis of the SEM.

Figure 2. Estimated model



Source: Authors' own elaboration.

Table 6 presents the assessment of the proposed SEM in which the path coefficients, representing the direct effects of the constructs, their standard

errors, their 95 per cent confidence interval, and the proportion of explained variance for each endogenous construct are given. According to

the results of the structural equation model estimation, all the antecedents had an impact on entrepreneurial intention. However, as evidenced by the model's coefficients of = 0.663, PA and PBC have a greater influence on EI than DT (S.E. = 0.031) for PA, = 0.203 (S.E. = 0.034) for PBC and = 0.062 (S.E. = 0.025) for DT.

Therefore, hypotheses *H1*, *H2*, and *H3* are confirmed. Furthermore, PA is also having an indirect effect on EI via DT, because the relevant path

coefficient is statistically significant (= 0.194, S.E. = 0.039). The model explains 64 per cent of the variance in entrepreneurial intention based on PBC, PA, and DT. Given that most prior studies using linear models often explain significantly less variance, this finding is very satisfying. Besides, the model also explains 40 per cent of the variance in Machiavellianism, 33 per cent in narcissism, and 22 per cent in psychopathy.

Table 6. Hypotheses testing results

<i>Path</i>	<i>PLS estimate</i>	<i>Bootstrap estimate</i>	<i>S.E.</i>	<i>Lower bound (95%)</i>	<i>Upper bound (95%)</i>	<i>R-sq</i>	<i>Result</i>
EI <--- PBC	0.203	0.207	0.034	0.138	0.272	0.642	Significant
EI <--- PA	0.663	0.659	0.031	0.591	0.717		Significant
EI <--- DT	0.062	0.062	0.025	0.016	0.110		Significant
DT <--- PA	0.194	0.194	0.039	0.118	0.270	0.038	Significant
Mach <--- DT	0.635	0.638	0.030	0.579	0.694	0.403	Significant
Psych <--- DT	0.467	0.469	0.038	0.401	0.543	0.218	Significant
Nar <--- DT	0.575	0.576	0.030	0.518	0.634	0.331	Significant

Source: Authors' elaboration.

5. DISCUSSION

The current research aimed to investigate the influence of Machiavellianism, narcissism, and psychopathy, the dark triad of personality traits, as commonly referred in the relevant literature, on the students' intention to be entrepreneurs, evaluated together with the effects of the antecedents of entrepreneurial intention of the theory of planned behaviour model, entrepreneurial/personal attitude and perceived behavioural control (Ajzen, 1991; Hmieleski & Lerner, 2016; Liñán & Fayolle, 2015).

Around 800 business students from a Greek Public University made up the sample, with 520 of them responding to an online survey. This is a sizable sample size when compared to relevant research (Guerrero & Marozau, 2022). According to previous studies, narcissism explains a substantial amount of variance in entrepreneurial intention (Hmieleski & Lerner, 2016; Liu et al., 2021; Hoang et al., 2022). Some scholars found also significant positive relationships between narcissism and psychopathy with entrepreneurial intention, whereas Iyayi & Obeki (2018a), in their study on Nigerian students, found no relationship between the dark triad and entrepreneurial intention, noting that cultural or ethnic factors may affect their findings. Moreover, Do and Dadvari (2017) found a positive relationship between the dark triad and entrepreneurial intention, proposing that personal and organizational achievement can be predicted by the three dark personality traits. This study found a significant relationship between the dark triad as one construct and entrepreneurial intention, using a similar approach to that of Do and Dadvari's (2017).

The conflicting findings reported by Do and Dadvari (2017) and Iyayi and Obeki (2018a), in addition to the partially supported relevant hypotheses in the studies by Hmieleski and Lerner (2016) and Mathieu and St-Jean (2013), necessitate further investigation such as the one the present study undertakes, to further illuminate the true nature of the dark triad and entrepreneurial intention relationship. Although the present study does not provide definitive answers regarding the relationship of the above variables, it does led

support to some of the earlier findings, presenting a clear significant relationship between the dark triad and entrepreneurial intention. Furthermore, personal attitude appears to be an even more important predictor of entrepreneurial intention than in earlier studies (Xanthopoulou & Sahinidis, 2022; Liñán & Fayolle, 2015; Sahinidis et al., 2021; Iyayi & Obeki, 2018a) and its effect is both direct and indirect, through the dark triad. Perceived behavioural control is also a significant predictor of entrepreneurial intention, corroborating earlier findings in numerous studies (Liñán & Fayolle, 2015; Liñán & Chen, 2009; Krueger & Carsrud, 1993; Iyayi & Obeki, 2018a).

6. CONCLUSION

Entrepreneurship education and practice are critically dependent on the motivating elements underlying the investigation and quest for entrepreneurial aim. This study attempted to add more information to the field of entrepreneurial intention by exploring the so-called "dark" personality traits and their impact on the theory of planned behaviour and mainly its ability to predict peoples' intentions to become entrepreneurs. The first contribution of the study lies in its theoretical implications in the research field of entrepreneurship and entrepreneurial intention. This combination of the used models and theories offers added value to the existing research since there are few studies that focus on the role of the dark triad in the intention to form a new business. The examination of the influence of dark triad traits as a mediator in the prediction ability of the theory of planned behaviour on the students' entrepreneurial intentions, offers new insights regarding these relationships. In order to further examine the impact of perceived behavioural control on entrepreneurial intention and the relationship between attitude, dark personality, and entrepreneurial intention, the present research introduces the dark triad that consists of narcissism, psychopathy, and Machiavellianism (Wu et al., 2019). The findings show that all antecedents had an impact on the entrepreneurial intention of

students. However, personal attitudes (PA) and perceived behavioural control (PBC) present stronger impact on entrepreneurial intention (EI) followed by dark traits (Machiavellianism, narcissism, and psychopathy). These findings confirm the research hypotheses *H2* and *H3*.

H2 proposes that individuals' personal attitudes towards entrepreneurship will have a positive impact on their intention to become an entrepreneur. This hypothesis is also supported by the theory of planned behaviour, which suggests that attitudes towards a behaviour influence the intention to perform that behaviour. Previous research has found support for this hypothesis, suggesting that individuals with more positive attitudes towards entrepreneurship are more likely to have the intention to start a business.

H3 proposes that individuals with dark personality traits (such as Machiavellianism, narcissism, and psychopathy) are more likely to have the intention to become an entrepreneur. This hypothesis is less well-supported by previous research, and the few studies that have examined this relationship have produced mixed results. Some studies have found a positive relationship between dark personality and entrepreneurial intention, while others have found no relationship or even a negative relationship. More research is needed to fully understand the relationship between dark personality and entrepreneurial intention.

This study has significant implications for academic policymakers and instructors, since the systematic fostering of entrepreneurial intention in students could provide empirical evidence and help formulate policies that encourage university students' entrepreneurship practices. Regarding educators, it is important to recognise that the number of students with dark personality traits is increasing over time, thus they need to become more experienced in leading students characterized by these traits. Students with dark personalities might typically be good at getting resources and have less fear of starting a new business than other students. Business school instructors could provide them with self-regulation skills so they can take advantage of the trait's adaptive characteristics while avoiding its socially counterproductive downside, which could lower their chances of achieving long-term goals. For example, students with high scores of Machiavellianism, if properly driven, they could be motivated to be more productive and effective in achieving long-term results. These areas of study have consequences for

how personality is conceptualized in the literature on entrepreneurship. However, the self-centred character of persons who are high on components of the dark triad, notably narcissism, necessitates shifting pupils' perspectives from "I" and "me" to "we" and "us". Finally, from the perspective of policymakers, grant programs with a more strategic focus should be designed to encourage entrepreneurship rather than a view of entrepreneurship that is celebrity-oriented. Policymakers and institutions who grant funding and prizes for starting up a business should steer clear of fast-life entrepreneurs with high levels of dark personality traits since they may be expected to carelessly run through resources quickly, without creating a successful business for a long-term period.

One research limitation is that the findings come from a sample of undergraduate business students in Greece. It will be interesting to observe if these associations hold up in more diverse situations and across ethnic backgrounds (Maes et al., 2014). A second limitation is that dark personality characteristics are measured only by using a 12-item questionnaire. An extended version of the questionnaire could have affected the outcomes of the study. Furthermore, this study does not take into consideration all the factors that compose the theory of planned behaviour, namely subjective norms were not included in this research, although the variable dark triad is included in some studies of the construct. It would be interesting for other studies to investigate the dark personality and the theory of planned behaviour in different context (Wu et al., 2019; Vamvaka et al., 2020; Brownell et al., 2021; McLarty et al., 2021; Do & Dadvari, 2017).

A final limitation is that the gender issue is not addressed because it is outside the research aim. The impact of perceived behavioural control on entrepreneurial intention and the relationship between personal attitude, dark personality, and entrepreneurial intention has contributed in the entrepreneurship literature, however, there is still a significant gap and many questions that remain unanswered and unfilled. This body of literature should be expanded by scholars because there are still many important contributions to be made. Future research could examine the validity of the results presented here in various scenarios utilizing additional variables not covered in this study and look into the possibility of latent variables that could be confusing the correlations covered above.

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APPENDIX

Table A.1. Proportions measures of entrepreneurial intention model and dark triad

<p>Entrepreneurial intention</p> <ul style="list-style-type: none"> • EI1 I am ready to do anything to be an entrepreneur. • EI2 My professional goal is to be an entrepreneur. • EI3 I will make every effort to start and run my own business. • EI4 I am determined to create a business venture in the future. • EI5 I don't have doubts about ever starting my own business. • EI6 I have a strong intention of ever starting a business.
<p>Personal attitude</p> <ul style="list-style-type: none"> • PA2 Being an entrepreneur implies more advantages than disadvantages to me. • PA3 A career as an entrepreneur is totally attractive to me. • PA4 If I had the opportunity and resources, I would love to start a business. • PA5 Being an entrepreneur would give me great satisfaction.
<p>Perceived behavioural control</p> <ul style="list-style-type: none"> • PBC1 Starting a firm and keeping it viable would be easy for me. • PBC2 I believe I would be completely able to start a business. • PBC3 I can control the creation process of a new firm. • PBC4 I know all about the practical details needed to start a business. • PBC5 I know how to develop an entrepreneurial project.
<p>Machiavellianism</p> <ul style="list-style-type: none"> • Mach1 I tend to manipulate others into doing what I want. • Mach2 I have cheated or lied to achieve my purpose. • Mach3 I tend to take advantage of others for my own benefit.
<p>Psychopathy</p> <ul style="list-style-type: none"> • Psych1 I don't care if I act ethically. • Psych2 I am cruel or indifferent to others. • Psych 3 I'm cynical.
<p>Narcissism</p> <ul style="list-style-type: none"> • Nar2 I want others to admire me. • Nar3 I expect special treatment, favor and favors from others.
<p>Dark triad</p> <ul style="list-style-type: none"> • DT1 I have a tendency to exploit others for personal gain; I believe that it is necessary to be ruthless in order to get ahead in life. • DT3 I have no problem deceiving others to get what I want.