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The Role of Affect in the Development of Entrepreneurial Intentions

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Abstract:

Advances on the study of entrepreneurial intention among students from universities motivate to further investigate the factors behind this intention. In this paper, we focus on the effect of affective traits (positive and negative) on the entrepreneurial intention antecedents proposed by Ajzen's theory of planned behavior drawing on the arguments of affect priming. Using a sample of 597 students from Spain, we use structural equation model to test our hypotheses. Our results show that positive affective traits have a positive impact on the attitude toward entrepreneurship (ATE), perceived behavioral control of entrepreneurship (PBC), and social norms toward entrepreneurship (SN). Negative affective traits negatively influence ATE and SN, but not PBC. In addition, using a *K*-means clustering analysis and an analysis of variance, our study further explores how different affective personalities relate to a particular level of entrepreneurial intention. Our results contribute to understand of the psychological processes that influence entrepreneurial intention. Overall, our research contributes to the literature on affect and entrepreneurial cognition by evaluating the interaction of affect and the cognitive antecedents of entrepreneurial intention.

Keywords: entrepreneurial intention, affective traits, theory of planned behavior, affect-priming

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1 Introduction

Entrepreneurial intention is the desire to own or to start a new business (Krueger, Reilly, and Carsrud 2000). Entrepreneurial intention has been widely studied using three antecedents proposed by the theory of planned behavior (TPB): attitude toward entrepreneurship (ATE), perceived behavioral control of entrepreneurship (PBC), and social norms toward entrepreneurship (SN; Ajzen 1991). This theory has been proven in numerous studies (Krueger and Carsrud 1993; Krueger, Reilly, and Carsrud 2000; Liñán and Chen 2009); this prior research argues that the three antecedents of TPB are cognitive in nature (Krueger and Carsrud 1993). Recently, some scholars have related prior family business exposure (Carr and Sequeira 2007), entrepreneurship education (Karimi et al. 2014; Entrialgo and Iglesias 2017), personality traits (Nabi and Liñán 2013; Munir, Jianfeng, and Ramzan 2019) closer and social valuation (Liñán, Urbano, and Guerrero 2011; Santos, Roomi, and Liñán 2016), and leadership skills (Henley et al. 2017) with the three antecedents. However, further research regarding antecedents, mediators and moderators is required in order to advance our understanding of entrepreneurial intention (Fayolle and Liñán 2014).

Some recent research has begun to explore the role of affect and emotions on different entrepreneurial processes (e.g. Baron 2008; Cardon et al. 2009; Hayton and Cholakova 2012; Podoynitsyna, Van der Bij, and Song 2012; Nikolaev, Shir, and Wiklund 2019). These studies adopt psychological arguments to show the key influence of affect on individual cognition (Bower 1991; Forgas 1995; Rusting 1998). However, given the very early stage of the investigation of the relation between affect and entrepreneurial cognition, our understanding is limited (Delgado García, Quevedo Puente, and Blanco Mazagatos 2015), and previous research has yet to relate the role of affect and emotions on entrepreneurial intention. Thus, drawing on the psychological literature and TPB, we analyze the impact of both positive and negative affective (NA) traits on the three antecedents of entrepreneurial intention.

This study makes three main contributions to the previous literature. First, we extend the literature on the antecedents of entrepreneurial intention by analyzing the influence of affective traits on the cognitive antecedents proposed by TPB (Ajzen 1991). Second, considering Baron's (2008) reflection that "it seems essential to include affect and its interface with cognition in ongoing efforts to investigate entrepreneurial cognition" (p.

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336), we extend prior literature on the influence of affect and emotions in the initial steps of the entrepreneurial process – a topic which, to date, has received little attention (Delgado García, Quevedo Puente, and Blanco Mazagatos 2015). Finally, we confirm the typology of affective personalities proposed by Norlander, Bood, and Archer (2002) by exploring the entrepreneurial intention of each of the four affective personalities.

The remainder of the paper is organized as follows. First, we introduce the theoretical background and propose our hypotheses. Second, we explain the sample and methodology and report the results from our analysis. Finally, we discuss the practical implications of our results, opportunities for future research and our study's limitations.

2 Theoretical Background and Hypotheses Development

Affect is the general term that refers to both emotion and mood (Daniels 1998). Emotions disappear fast, involve high arousal, and are generated by a specific event. In contrast, moods are stable, involve low arousal, and are often not linked to any specific event (Frijda 1986). Research on affect has focused on both affective states and traits. Affective states are current moods generated by an external event, and affective traits are stable individual differences in the long-term tendency to experience positive or NA (Baron 2008). Although affective states and traits have been shown to produce parallel cognitive effects in many situations (Lyubomirsky, King, and Diener 2005; Rusting 1998), we use affective traits because these dispositions are important to entrepreneurial decision-making (Nikolaev, Shir, and Wiklund 2019).

Entrepreneurship literature addresses the important impact of affect and emotions on entrepreneurial cognition and decision-making (Baron 2008; Labaki 2013; Delgado García, Quevedo Puente, and Blanco Mazagatos 2015) but not on entrepreneurial intention. Baron (2008) proposes the role of affect in different aspects of entrepreneurship, such as opportunity recognition, resource acquisition, and the ability to respond in dynamic environments. Later, Delgado-García, Rodríguez-Escudero, and Martín-Cruz (2012) empirically address the role of emotions in entrepreneurs' statement of goals and in their satisfaction with business performance. Furthermore, Nikolaev, Shir, and Wiklund (2019) study how positive and NA influence entrepreneurial behavior based on job satisfaction theories.

Entrepreneurial intention research has adopted models based on psychological literature, such as TPB (Ajzen 1991). TPB, the most commonly used cognitive model to explain entrepreneurial intention (Schlaegel and Koenig 2014), uses three antecedents: ATE, PBC, and SN (Ajzen 1991). However, there are few studies that relate affect and TPB. First, Hayton and Cholakova (2012) theoretically address the influence of affect on entrepreneurial perception and subsequently explores the idea based on psychological and cognitive models (e.g. affect infusion model, valence instrumentality expectancy theory, TPB). In addition, Zhang, Wang, and Owen (2015) have found the influence of psychological well-being on entrepreneurial intention.

Prior psychological research considers the interaction of affect and cognition (Zajonc 1980; Lazarus 1982), and the specific impact of affect on cognition (Forgas 1995; Rusting 1998), by examining both positive and negative affective valence on cognition (Bower 1991; Forgas 1995; Rusting 1998). One of the central hypotheses in this literature is related to affect congruency, which predicts that individuals are more efficient at processing (i.e. perceive, attend to, learn, interpret, associate with, and recall) information that is consistent with their affective traits (Rusting 1998). A common argument to explain affect congruency is affect-priming. According to Forgas's (1995) affect infusion model, "affect-priming principle suggests that affect can indirectly inform social judgments by facilitating access to related cognitive categories" (p. 44). Specifically, Forgas proposes four consequences of affect-priming: (a) selective attention; (b) selective encoding; (c) selective retrieval; and (d) associations and interpretations.

Individuals use affect-priming when they face complex and ambiguous judgement goals. In these situations, individuals cannot fall back upon previous experience and operate in automatic ways. Therefore, they engage in careful and constructive processes of thought that favor affect-priming (Bless et al. 1996). Some previous entrepreneurship research uses affect-priming arguments to explore the role of affect on entrepreneurs' judgment and decision-making (Hayton and Cholakova 2012; Podoyntsyna, Van der Bij, and Song 2012; Delgado García, Quevedo Puente, and Blanco Mazagatos 2015). Entrepreneurial intention is a complex process (Krueger 2017), where both affect and cognition interact in a sequence that can be explained by affect-priming arguments and TPB (i.e. ATE, PBC, and SN).

Figure 1 shows the model used in the study. The model consists of positive and negative affective traits, the TPB, and the different control variables. We do not state hypotheses about TPB because previous research widely accepts the positive relation between the three antecedents and entrepreneurial intention (Schlaegel and Koenig 2014).

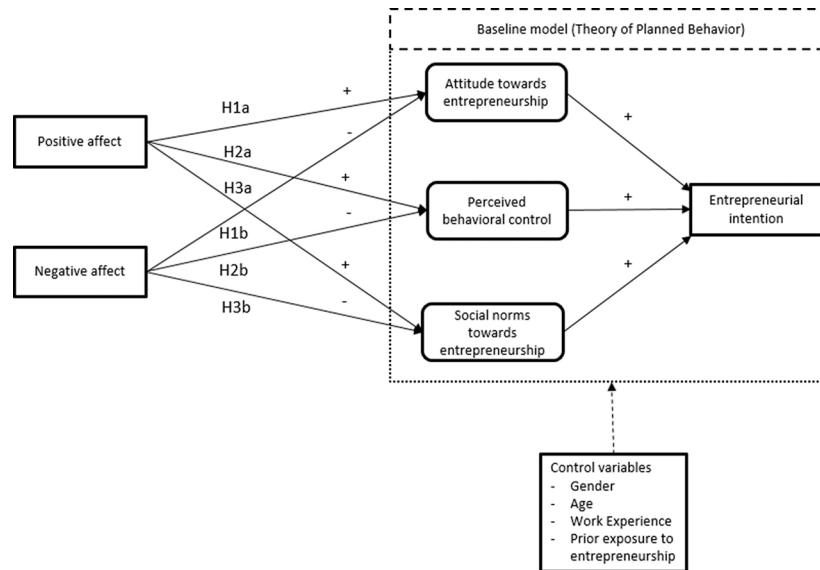


Figure 1: The research model based on TPB and affective traits.

2.1 Affect and Attitude toward Entrepreneurship

ATE refers to the degree to which an individual has a positive or negative opinion about engaging in entrepreneurial behavior (Kolvereid 1996; Ajzen 2001). A person's ATE is also related to his or her belief that taking entrepreneurial actions leads to specific outcomes and to his or her evaluation of those outcomes (Schlaegel and Koenig 2014). As such, ATE affects a person's judgment and requires him or her to interpret complex and indeterminate information about creating a new business. Because affect favors mood-consistent associations and influences the subsequent interpretations of complex and ambiguous situations (Bower 1991), it may influence ATE through associations and interpretations.

Literature on affect finds that positive affect (PA) influences the interpretation of ambiguous situations in a positive direction (Isen et al. 1978; Isen and Shalcker 1982; Forgas 1990) and, as such, can lead people to overestimate the probabilities of positive outcomes (Wright and Bower 1992; Zelenski and Larsen 2002). Indeed, research finds that high levels of PA enhance the optimistic bias, that is, a tendency to expect positive outcomes and events (Simon, Houghton, and Aquino 2000). Therefore, in the entrepreneurial context, PA may lead individuals to expect better outcomes for entrepreneurial endeavors.

In the evaluation of the potential outcomes of entrepreneurship, individuals consider the risks of entrepreneurial behavior. Therefore, risk perception influences ATE (Nabi and Liñán 2013), and PA decreases individuals' consideration of the frequency of risks (Johnson and Tversky 1983; Wright and Bower 1992). In other words, PA negatively affects risk perceptions and positively affects ATE. Given this discussion, we state the following hypothesis:

H1a: PA positively influences ATE.

Research on affect shows that NA signals to individuals that the situation is not going well and causes them to process information carefully before they determine their course of action (Martin and Stoner 1996). NA strengthens the negativity bias – that is, a tendency to overestimate the importance of negative information related to some action or event (Kunda 1999) and triggers pessimistic assessments (Johnson and Tversky 1983; Direnfeld and Roberts 2006). In the entrepreneurial context, NA may cause individuals to emphasize the possible negative outcomes of entrepreneurship.

As previously discussed, ATE implies an evaluation of the potential outcomes of entrepreneurship, which is influenced by risk perception (Nabi and Liñán 2013). Prior research shows that NA causes individuals to overestimate the probability of negative outcomes (i.e. risks) and underestimate the probability of positive outcomes (Johnson and Tversky 1983; Wright and Bower 1992; Zelenski and Larsen 2002). As such, individuals with NA are more likely to perceive the world as a threatening place, and thus they focus on avoiding potential loss (Jorgensen 1996). Therefore, NA may lead individuals to overestimate the risks of entrepreneurship, negatively influencing ATE. Given this discussion, we state the following hypothesis:

H1b: NA negatively influences ATE.

2.2 Affect and Perceived Behavioral Control of Entrepreneurship

PBC refers to an individual's positive or negative perception of whether he or she possesses the capabilities, resources, and knowledge (i.e. self-efficacy), as well as sufficient control over possible external constraints (i.e. locus of control; Ajzen 2002), to engage successfully in an entrepreneurial endeavor. Previous literature associates affect with different types of self-perceptions (Lyubomirsky, King, and Diener 2005). For example, Schuettler and Kiviniemi (2006) find that PA is related to higher perceived self-efficacy.

Bower (1991) finds that individuals' judgements are influenced by retrieval processes. These retrieval processes are, in turn, influenced by affect: Information congruent with affect has a greater likelihood of being retrieved (Forgas 1995). Consequently, affect influences PBC through affect-priming or, more specifically, through selective retrieval. PA leads to the retrieval of positive information and knowledge from memory (Isen et al. 1985; Forgas 1995). Therefore, PA allows individuals to rely more confidently on their general knowledge (Bless et al. 1996; Foo, Uy, and Murnieks 2015). This confidence implies the requirement of fewer cognitive resources, and thus additional cognitive resources can be deployed elsewhere to incorporate more information stored in memory or to integrate information from other domains (Bless et al. 1996). As a result, PA encourages increased knowledge integration from disparate sources of information over longer periods of time (Foo, Uy, and Murnieks 2015). Because information and knowledge are essential elements of self-efficacy, the first component of PBC, PA helps individuals to acquire specific task-related skills and to have a positive perception of those skills (i.e. high self-efficacy; Baron 2007; Lyubomirsky, King, and Diener 2005).

PA also increases the planning fallacy (Baron 1998), a tendency by individuals to assume that they can complete tasks sooner than is actually feasible or accomplish more than they actually can during a specific period of time or (Buehler, Griffin, and Ross 1994). Thus, individuals with high PA may believe that the process of creating a business is easier and less time-consuming than it really is. This perception of control, thus, is related to the second component of PBC, locus of control.

Aggregating our discussion of self-efficacy and locus of control as they relate to PBC, we propose the following hypothesis:

H2a: PA positively influences PBC.

In contrast to PA, NA influences the retrieval of negative information and knowledge (Forgas 1995). Individuals with NA consider their current capabilities to be deficient, causing them to carefully examine and seek an improvement in their current general knowledge (Ambady and Gray 2002). Consequently, NA prompts a narrower focus within a more restricted domain of knowledge because these individuals do not have spare cognitive resources to incorporate and integrate more information (Foo, Uy, and Murnieks 2015). As a result, they are less likely to make associations between disparate categories (Bolte, Goschke, and Kuhl 2003). Thus, NA does not allow individuals to expand their knowledge across time. Because they perceive themselves as having less information and knowledge, their self-efficacy is reduced.

NA may also cause individuals concern that they can analyze different situations correctly (Bolte, Goschke, and Kuhl 2003) and is therefore related to a lowered sense of control in accomplishing tasks (Bosma, Stansfeld, and Marmot 1998). Consequently, when individuals with NA engage in entrepreneurial behavior, they will have a negative perception of their ability to control the outcome (i.e. locus of control).

In line with these arguments about self-efficacy and locus of control, we state the following hypothesis:

H2b: NA negatively influences PBC.

2.3 Affect and Social Norms toward Entrepreneurship

SN are the perceived beliefs of reference people (e.g. family, friends) have about entrepreneurship (Ajzen 2001). Positive (negative) social norms encourage (discourage) individuals from adopting favorable perceptions of behaviors necessary to engage in entrepreneurial behavior (Schlaegel and Koenig 2014).

Individuals selectively attend to the SN of family and friends when they consider entrepreneurship. Selective attention means that, given the overload of information that individuals receive, they pay attention to, or select, information that is congruent with their current affect (Forgas 1995). Thus, affect influences SN through this selective attention. In addition, SN require individuals to encode the differing opinions their reference people have about entrepreneurship. Selective encoding means that, again, individuals may attend more closely to the affect-congruent information (Forgas 1995). Thus, affect also influences SN through selective encoding.

PA tends to reduce attention to negative information (Klayman and Ha 1987; Forgas 2000), and because negative information can reduce or undermine PA, individuals may cognitively screen it out (Raghunathan and Trope 2002). However, even individuals with PA cannot simply ignore all the potential negative information

that they receive. Yet, when they attend to and encode both positive and negative information, congruent with their affect, individuals with PA will encode positive information more efficiently (Forgas 1995). PA also allows individuals to have positive perceptions of others (Lyubomirsky, King, and Diener 2005; Baron 2007). Consequently, through selective attention and coding, PA favors a positive perception of reference people's opinion of entrepreneurship.

In line with this discussion, we propose the following hypothesis:

H3a: PA positively influences SN.

As previously stated, individuals selectively attend to the information that is congruent with their affect (Forgas 1995), and thus NA leads individuals to attend negative information (Rusting 1998). However, individuals with NA cannot ignore all positive information that they receive, but when attending to both positive and negative information, they better encode the negative information (Forgas 1995). In other words, individuals with NA perceive negative information better than positive information (Baron 1998). Furthermore, NA leads individuals to adopt unfavorable assumptions and expectations of their reference people (Yuen and Lee 2003). Consequently, through the processes of selective attention and encoding, individuals with NA tend to have a negative perception of how their reference people perceive.

In line with these arguments, we state the following hypothesis:

H3b: NA negatively influences SN.

3 Research Method

3.1 Sample and Data Collection

Our sample is composed by university undergraduate business students in their last two years of university. These students are currently facing major career decisions related to their entrepreneurial intentions (Krueger 1993), and given the relatively short period of time left in their schooling, these intentions are likely to remain relatively stable postgraduation (Audet 2004). Indeed, university student-based samples are very common in research on entrepreneurial intention and widely considered appropriate for this type of research (Kolvereid 1996; Krueger, Reilly, and Carsrud 2000; Veciana, Aponte, and Urbano 2005; Liñán and Chen 2009; Nabi and Liñán 2013; Schlaegel and Koenig 2014; Henley et al. 2017).

We collected the information in October and December of 2017. Students from two universities in Spain voluntarily responded to questionnaires after being informed about the goal of the research. We obtained 608 responses and discarded 11 responses due to missing data. Table 1 shows the characteristics of the remaining 597 in terms of age, gender, experience as self-employed, experience as employee, family entrepreneur, and close friend entrepreneur. These figures are very similar to the averages for students at the two participating universities.

Table 1: Sample characteristics.

Gender	<i>N</i>	% of total	Age	<i>N</i>	% of total
			19	10	1.7
			20	92	15.2
			21	201	33.7
Male	248	41.5	22	126	21.1
Female	349	58.5	23	72	12.1
			24	28	4.7
			25	26	4.4
			>25	42	7.1
Total	597	100.00	Total	597	100.00
Experience as self-employed	<i>N</i>	% of total	Experience as employee	% of total	
Yes	30	5.0	Yes	302	50.6
No	567	95.0	No	295	49.4

Total	597	100.00	Total	597	100.00
Family member entrepreneur	<i>N</i>	% of total	Close friend entrepreneur	<i>N</i>	% of total
Yes	351	58.8	Yes	297	49.7
No	246	41.2	No	300	50.3
Total	597	100.00	Total	597	100.00

3.2 Measurement Scales

To measure TPB variables, we use Liñan and Chen's (2009) Entrepreneurial Intent Questionnaire, which is used extensively in previous literature on entrepreneurial intention (Kolvereid 1996; Krueger, Reilly, and Carsrud 2000; Veciana, Aponte, and Urbano 2005; Liñan, Urbano, and Guerrero 2011; Karimi et al. 2014). Again in line with previous research, to measure individuals' affective traits, we adopt the Positive and Negative Affect Schedule (PANAS), as developed by Watson, Clark, and Tellegen (1988) and adapted into Spanish by Sandín et al. (1999). The scale is composed of 20 items (10 items related to PA and 10 items related to NA) and can be used for different time frames.

3.3 Control Variables

We use several control variables for the analysis. For ATE, we include age as control variable because literature shows that age is negatively related with the desire to start a business (Curran and Blackburn 2001). In addition, previous literature suggests that men have a higher orientation for entrepreneurial behavior than women (Mathews and Moser 1995), so we include a dummy variable for gender, which equals 1 if the individual is female, and zero otherwise. Regarding PBC, prior research shows that (a) job experience is positively related to the probability of creating a new business (Mathews and Moser 1995; Aragon-Sanchez, Baixauli-Soler, and Carrasco-Hernandez 2017) and (b) entrepreneurial experience is related with the individuals' belief in their entrepreneurial potential (Shepherd 2003). Therefore, we operationalize work experience in two dummy variables, which equal 1 if the respondents have previous experience being employed or self-employed, and zero otherwise. Furthermore, the literature positively links individuals' discovery of entrepreneurial opportunities with prior exposure to entrepreneurship (Davidsson and Honig 2003; Entrialgo and Iglesias 2017). Therefore, we control the effect on PBC with two dummies, which equal 1 if students have prior family members or close friends with entrepreneurial experience, and zero otherwise.

3.4 Common Method Bias

Common method bias is a serious problem when the dependent and independent variables refer to perceptual measures answered by the same individual (Podsakoff et al. 2003). To evaluate this effect, we conduct a Harman one-factor test (Podsakoff and Organ 1986) with TPB variables and affective traits to determine whether variance in the data is largely attributed to a single factor. Adopting the rule of an eigenvalue greater than 1, we find eight factors and the highest covariance explained by a single factor is only 25.4 %. Thus, common method bias is not a problem in our sample.

4 Analysis and Results

4.1 PANAS Scale

Prior to evaluating the psychometric properties of our scales, we identify the categories of affect through a principal component analysis with the varimax rotation (IBM SPSS Statistics 24). We use the eigenvalue criteria

to determine the number of factors or components to retain, which results on the selection of six main factors (i.e. very close to 1).

Table 2 shows the eigenvalues and the percentage of explained variance of these factors. The six factors are divided in three categories of PA and three categories of NA. This result is in line with the traditional view of affective valence that many differences exist among emotions of the same valence (Lerner and Keltner 2000). In fact, Watson and Clark (1999) developed the PANAS-X from the PANAS to explain that “affect is characterized by two broad higher order dimensions (NA and PA), each of which is composed of several correlated, yet ultimately distinguishable specific affects” (p. 17).

Table 2: Results of PANAS factorial analysis.

PA1	PA2	PA3	NA1	NA2	NA3
$\lambda = 4.112$	$\lambda = 0.989$	$\lambda = 0.949$	$\lambda = 3.312$	$\lambda = 1.355$	$\lambda = 1.104$
% EV = 20.560	% EV = 4.946	% EV = 4.712	% EV = 16.561	% EV = 6.777	% EV = 5.519
Active	Alert	Interested	Afraid	Hostile	Distressed
Enthusiastic	Attentive		Ashamed	Irritable	Jittery
Excited	Determined		Guilty	Upset	Nervous
Proud	Inspired		Scared		
Strong					

Note: λ = eigenfactor; EV = explained variance of each factor.

Our six-factor model converges with the different compositions of the PANAS-X as it shows the presence of distinct, although interrelated, affects within the general affect categories of the PANAS. This approach recognizes that individuals make more distinctions in the content of the affect scales than what a one-dimensional approach to PA and NA have assumed (Gaudreau, Sanchez, and Blondin 2006).

To operationalize our results, we model both PA and NA as second-order constructs. The presence of distinct groups of items in PA or NA does not imply any shortcomings of these affective traits because a higher-order factor within a scale can include somewhat distinct or dissimilar lower-order factors (Mehrabian 1997). In other words, the first-order construct refers to narrowly defined phenomena or fine-grained aspects of a broader construct, whereas the second-order dimension captures a global or holistic phenomenon (Bagozzi and Edwards 1998). Establishing a second-order construct can reduce the number of relations in complex structural models, making the estimation more parsimonious and easier to grasp (Hair et al. 2016). Since our hypotheses are formulated for PA and NA as higher-order constructs, this operationalization allows us to estimate the results accurately.

4.2 Measurement Model

We apply structural equation modeling for our statistical analysis. Specifically, we use the partial least squares (PLS) approach because it does not suffer from indeterminacy problems associated with other modeling techniques and does not require data normality (Wittmann, Hunt, and Arnett 2009). Moreover, PLS can handle both reflective and formative constructs (Chin and Newsted 1999) and allows us to model first-order and second-order constructs. All first-order constructs are reflective constructs except SN construct, which is formative. The second-order constructs of PA and NA are modeled as formative.

We evaluate the measurement model of the reflective constructs by examining item reliability, internal consistency, and convergent and discriminant validity (Roldán and Leal 2003). Table 3 provides the results. All item loadings are significant at $p < 0.01$. For all the constructs, Cronbach’s alphas exceed 0.6, and composite reliability exceeds 0.7. Furthermore, the average variance extracted exceeds or is close to the threshold of 0.5 (Fornell and Larcker 1981).

Table 3: Reliability and convergent validity.

Construct/indicator	α	AVE	CR	Factor loading	Factor weight
Entrepreneurial intention	0.893	0.825	0.934		
Rate the following statements:					
I am ready to do whatever it takes to become an entrepreneur				0.852**	
My professional goal is to become an entrepreneur				0.923**	
I will make every effort to create and run my own company				0.928**	
I am determined to set up a firm in the future				0.930**	
I have e seriously thought about starting a business in the future				0.866**	
Attitude toward entrepreneurship	0.929	0.787	0.949		
Indicate your agreement:					
Being an entrepreneur implies more advantages than disadvantages for me				0.917**	
The profession of entrepreneur appeals to me				0.769**	
If I had the chance and the resources, I would like to be an entrepreneur				0.925**	
Being an entrepreneur would provide me with great satisfaction				0.902**	
Among several employment options, I would prefer to be an entrepreneur				0.895**	
PBC of entrepreneurship	0.899	0.668	0.923		
Indicate your agreement about your entrepreneurial skills:					
Starting a business and keeping it running would be easy for me				0.841**	
I am ready to create a viable business				0.834**	
I can control the process of creating a new business				0.859**	
I know the practical details needed to create a business				0.762**	
I know how to develop an entrepreneurial project				0.784**	
If I create a company, I have a good chance of being successful				0.800**	
SN towards entrepreneurship (formative)	-	-	-		0.570**
Think about the people around you usually, to what extent would they applaud and agree with your desire to start a business?					0.555**
Your family					
Your friends and colleagues					
Positive affect 1	0.762	0.521	0.844		
Active				0.732**	
Enthusiastic				0.698**	
Excited				0.732**	
Proud				0.650**	
Strong				0.764**	
Positive affect 2	0.624	0.499	0.785		
Alert				0.680**	
Attentive				0.642**	
Determined				0.774**	

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Inspired					0.634**
Positive affect 3					
Interested					1.000**
Negative affect 1					
Afraid	0.681	0.520	0.838		0.682**
Ashamed					0.701**
Guilty					0.710**
Scared					0.759**
Negative affect 2					
Hostile	0.693	0.633	0.812		0.807**
Irritable					0.824**
Upset					0.725**
Negative affect 3					
Distressed	0.697	0.634	0.838		0.739**
Jittery					0.800**
Nervous					0.825**

Note: AVE = Average variance extracted. CR = composite reliability. ** $p < 0.01$. * $p < 0.05$.

We evaluate the measurement quality of the formative construct (social norms) according to their weights (Chin 1998), which indicate how each item contributes to its respective construct. Table 3 shows that the weights of SN items are statistically significant. We also verify the absence of high multicollinearity: The highest variance inflation factor is 1.506. Thus, multicollinearity is not a problem (Kleinbaum et al. 2013).

Table 4 shows the different groups of affective traits that compose each subdimension. To statistically validate their formative character, we examine the significance of the contribution of each facet of the dimensions to the second-order construct. The outer weights of all subdimensions confirm that the fit of the measurement models is good. Next, we check for multicollinearity using variance inflation factor. Values of the respective dimensions are below the cut-off value of 5, indicating no collinearity concerns.

Table 4: Quality criteria of second-order measurement.

Formative second-order construct facets/components	Outer weights	VIF
Positive affect		
PA1: excited, strong, enthusiastic, proud, active	0.648**	1.548
PA2: alert, inspired determined, attentive	0.436**	1.536
PA3: interested	0.105**	1.059
Negative affect		
NA1: guilty, scared, ashamed, afraid	0.439**	1.335
NA2: hostile, irritable, upset	0.403**	1.384
NA3: distressed, nervous, jittery	0.414**	1.503

Note: VIF = variance inflation factor. Bias-corrected bootstrap significance levels: ** $p < 0.01$, * $p < 0.05$ (one-tailed test).

Finally, we consider the discriminant validity of the reflective scales by examining whether the root square of the average variance extracted is larger than the interconstruct correlations (Fornell and Larcker 1981). Table 5 provides the results, which confirm the discriminant validity of our constructs.

Table 5: Zero-order correlations and discriminant validity.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Entrepreneurial intention	0.913	0.835	0.570	n.a.	0.312	0.350	0.213	0.048	0.123	0.086	0.157	0.099	0.138	0.203	0.155	0.094
2. Attitude toward entrepreneurship	0.770	0.887	0.607	n.a.	0.211	0.296	0.234	0.091	0.173	0.086	0.100	0.071	0.102	0.143	0.125	0.046
3. Perceived behavioral control	0.525	0.567	0.817	n.a.	0.311	0.366	0.124	0.087	0.099	0.069	0.131	0.215	0.186	0.210	0.098	0.137
4. Social norms	0.261	0.378	0.238	–	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5. Positive affect 1	0.264	0.179	0.266	0.153	0.722	0.835	0.249	0.157	0.248	0.099	0.050	0.071	0.154	0.156	0.051	0.146
6. Positive affect 2	0.271	0.228	0.285	0.095	0.586	0.706	0.254	0.163	0.152	0.112	0.154	0.095	0.177	0.120	0.123	0.170
7. Positive affect 3	0.207	0.226	0.118	0.096	0.219	0.200	–	0.037	0.031	0.099	0.076	0.008	0.051	0.088	0.077	0.017
8. Negative affect 1	0.000	–0.060	–0.060	–0.086	–0.084	–0.094	–0.030	0.721	0.591	0.675	0.055	0.029	0.031	0.040	0.084	0.106
9. Negative affect 2	–0.086	–0.120	–0.046	–0.153	–0.155	–0.064	–0.036	0.389	0.796	0.756	0.087	0.036	0.030	0.078	0.028	0.076
10. Negative affect 3	–0.062	–0.069	–0.048	–0.037	–0.051	–0.010	–0.081	0.467	0.489	0.796	0.092	0.064	0.071	0.017	0.047	0.119
11. Gender	–0.152	–0.107	–0.127	0.061	–0.033	–0.060	–0.076	–0.011	0.021	0.072	–	0.020	0.091	0.066	0.023	0.084
12. Age	0.096	0.070	0.201	–0.039	0.062	0.076	0.008	0.014	–0.021	–0.026	–0.020	–	0.063	0.231	0.063	0.136
13. Experience as self-employed	0.134	0.099	0.175	0.005	0.136	0.144	0.051	–0.022	–0.014	–0.013	–0.091	0.063	–	0.208	0.063	0.087
14. Experience as employee	0.197	0.139	0.198	0.074	0.138	0.097	0.088	–0.008	–0.041	0.000	–	0.231	0.208	–	0.078	0.163
15. Entrepreneur in family	0.151	0.121	0.093	0.077	0.037	0.057	0.077	0.068	0.000	0.036	0.023	0.053	0.063	0.078	–	0.061
16. Close friend entrepreneur	0.091	0.047	0.132	–0.001	0.127	0.144	–0.017	–0.086	–0.043	–0.100	–0.084	0.136	0.087	0.163	0.061	–

Note: The diagonal elements (in bold) are the values of the square root of the AVE. The values below the diagonal are the zero-order correlation coefficients. The elements above the diagonal are the values of HTMI ratio. n.a. = not applicable.

Furthermore, as recommended by Henseler, Ringle, and Sarstedt (2015), we also examined heterotrait–monotrait (HTMT) ratios of correlations. Table 5 does not show HTMT ratios above the threshold of 0.85, and none of the corresponding confidence intervals included the value 1, which means that this study met the criteria for establishing adequate discriminant validity suggested by Henseler, Ringle, and Sarstedt (2015). In sum, we assert that all constructs possess good psychometric properties.

4.3 Structural Model

We use SmartPLS 3.0 to bootstrap 1,000 randomly generated subsamples to determine the significance of the Beta coefficients (β). Table 6 provides the results. PA positively influences ATE ($\beta = 0.226, p = 0.000$), PBC ($\beta = 0.264, p = 0.000$), and SN ($\beta = 0.141, p = 0.005$). These findings support H1a, H2a and H3a, respectively. NA influences ATE ($\beta = -0.076, p = 0.032$) and SN ($\beta = -0.101, p = 0.011$), supporting H1b and H3b, respectively. However, NA does not influence PBC ($\beta = -0.029, p = 0.226$); this result does not support H2b.

Table 6: Standardized parameter estimates.

Hypotheses	Path coefficient	t-value	Outcome
Positive affect → Attitude toward entrepreneurship	0.226	5.248**	H1a supported
Negative affect → Attitude toward entrepreneurship	-0.076	1.851*	H1b supported
Positive affect → Perceived control of entrepreneurship	0.264	6.295**	H2a supported
Negative affect → Perceived control of entrepreneurship	-0.029	0.874	H2b not supported
Positive affect → Social norms toward entrepreneurship	0.141	2.558**	H3a supported
Negative affect → Social norms toward entrepreneurship	-0.101	2.265*	H3b supported
Theory of planned behavior			
Attitude toward entrepreneurship → Entrepreneurial intention	0.704	26.134**	Supported
Perceived control of entrepreneurship → Entrepreneurial intention	0.130	4.273**	Supported
Social norms toward entrepreneurship → Entrepreneurial intention	-0.038	1.279	Not supported
Indirect effects			
Positive affect → Entrepreneurial intention	0.188	5.688**	
Negative affect → Entrepreneurial intention	-0.054	1.702*	
Control relationships			
Age → Attitude toward entrepreneurship	0.051	1.277	
Gender → Attitude toward entrepreneurship	-0.081	2.246*	
Experience as employee → Perceived control of entrepreneurship	0.125	3.168**	
Experience as self-employed → Perceived control of entrepreneurship	0.098	2.333**	
Family member entrepreneur → Perceived control of entrepreneurship	0.059	1.522	
Close friend entrepreneur → Perceived control of entrepreneurship	0.058	1.477	
R ² of entrepreneurial intention		0.606	
R ² of attitude toward entrepreneurship		0.074	
R ² of perceived control of entrepreneurship		0.139	
R ² of social norms toward entrepreneurship		0.033	

** $p < 0.01$. * $p < 0.05$.

Table 6 also shows the results for the TPB and the control variables. ATE ($\beta = 0.704, p = 0.000$) and PBC ($\beta = 0.130, p = 0.000$) influence entrepreneurial intention, but SN do not ($\beta = -0.038, p = 0.101$). Regarding control variables, gender influences ATE ($\beta = -0.081, p = 0.012$), but age does not ($\beta = 0.051, p = 0.101$)¹. For PBC, both experience as an employee ($\beta = 0.125, p = 0.001$) and being self-employed ($\beta = 0.098, p = 0.010$) have a positive influence on entrepreneurial intention. Both having a family member ($\beta = 0.059, p = 0.064$) and close friend ($\beta = 0.058,$

$p = 0.070$) with prior entrepreneurial experience have no significant effect on PBC. In sum, the TPB is confirmed, and the control variables have significant effects.

Finally, we include in Table 6 the total indirect effects of both positive and NA on entrepreneurial intention. We find a positive significant indirect effect of PA on entrepreneurial intention ($\beta = 0.188, p = 0.000$). In addition, NA influence negatively and significantly entrepreneurial intention in an indirect way ($\beta = -0.054, p = 0.043$).

4.4 Additional Analysis

People can experience different combinations of PA and NA (Johnson and Johnson 2000). Therefore, beyond the individual impact found for each type of affect on the three antecedents of TPB, we explore the combination of different levels (high and/or low) of affect (positive and/or negative) that result in different degrees of entrepreneurial intention. We draw on the configurations suggested by Norlander, Bood, and Archer (2002), previously used for both adult and adolescent populations (Norlander, Bood, and Archer 2002; Garcia 2012) and thus acceptable for a university student sample. These four different personality configurations are (a) self-actualizing (high PA and low NA); (b) high affective (high PA and high NA); (c) low affective (low PA and low NA); (d) self-destructive (low PA and high NA).

We use a K-means cluster analysis to identify groups of individuals with different affects. Table 7 shows how the resulting four clusters fit with each of the just discussed configurations. This table shows the means of PA and NA and the number of observations within each cluster. The PA mean is quite a bit higher than the NA mean in both high and low affect scores, which is similar to previous literature that also finds a higher cut-off mean for PA than for NA (Norlander, Bood, and Archer 2002; Garcia 2012).

Table 7: Cluster (configuration) description by affective traits.

Cluster	Factors ^a		Total number ^b
	Positive affect	Negative affect	
Self-actualizing (1)	4.63	1.76	162
High affective (2)	3.99	3.10	153
Low affective (3)	3.07	1.44	177
Self-destructive (4)	2.41	3.36	89

^a Mean of positive and negative affect correspond to the mean of the 10 items (Likert 1–5) of these variables weighted by the loadings obtained in PLS.

^b 8 missing data appeared during the cluster analysis.

In the next step of the analysis, we use an analysis of variance (ANOVA; IBM SPSS Statistics 24). Table 8 shows that the self-actualizing group has the highest mean of entrepreneurial intention (4.332) followed by the high affective (3.945), low affective (3.634), and self-destructive (3.571) groups. The ANOVA results indicate that many significant differences in entrepreneurial intention exist across the four configurations (see Table 8). First, the self-actualizing group, significant differences exist for the high affective, low affective, and self-destructive groups. Second, for high affective group, significant differences exist for the low affective and self-destructive groups. Finally, low affective group and self-destructive group have no significant differences for entrepreneurial intention.

Table 8: T-test of clustered groups on entrepreneurial intention.

Dimension	(1)	(2)	(3)	(4)	1–2	1–3	1–4	2–3	2–4	3–4
Entrepreneurial intention ^a	4.332	3.945	3.634	3.571	**	**	**	*	*	n.s.

^a Mean of entrepreneurial intention correspond to the mean of the five items on a Likert-type scale (1–7) of this variable weighted by the loadings obtained by partial least squares.

Note: ** $p < 0.01$. * $p < 0.05$. n.s. = not significant.

5 Discussion

Our study extends the literature on entrepreneurial intention by analyzing the impact of both positive and negative affective traits on the cognitive antecedents proposed by TPB (Ajzen 1991). Previous research has considered the influence of affect on different entrepreneurial processes (Baron 2008), such as opportunity evaluation (Podoyntsyna, Van der Bij, and Song 2012), self-employment transitions (Nikolaev, Shir, and Wiklund 2019), and performance (Baron, Tang, and Hmieleski 2011). However, we extend the literature on the influence of affect by examining the initial step of entrepreneurship, namely, on the development of entrepreneurial intentions. Therefore, we follow Fayolle and Liñan's (2014) suggestion of continuing the study of intention models to understand the main variables that contribute to entrepreneurial intention. In a more general view, this study also responds to Baron's (2008) argument that the interaction of affect and cognition is essential to investigation of entrepreneurial cognition. Accordingly, we integrate important psychological models, such as affective congruency (Rusting 1998) and affect infusion model (Forgas 1995), into a cognitive model of entrepreneurial intention, the TPB (Ajzen 1991).

Our initial results provide two essential findings. First, PA has a direct positive influence on ATE, PBC, and SN, confirming an indirect and positive influence on entrepreneurial intention. This result suggests that PA influences the processes of associations and interpretations, selective retrieval, selective attention, and selective encoding. In other words, we show that, in general, PA positively influences entrepreneurial intention, which is in line with Hayton and Cholakova's (2012) theoretical research that examines the influence of PA on the intention to develop an entrepreneurial idea. From a broader perspective, our results are consistent with prior research confirming that PA is a very relevant element for the basic cognitive processes related with entrepreneurship (Baron 2008; Baron, Tang, and Hmieleski 2011), including for the processes that occur prior to engaging in entrepreneurial behavior.

Second, NA negatively influences ATE and SN. This finding suggests that NA influences the processes of associations and interpretations, selective attention, and selective encoding. Thus, we confirm prior research on the negative influence of NA on entrepreneurial factors (Baron 2008). From a broader perspective, our results related to NA contribute to the literature on TPB, which is more focused on the factors that promote the antecedents of entrepreneurial intention, because we find a factor that does not promote these antecedents; namely, NA decreases both ATE and SN, confirming an indirect negative effect on entrepreneurial intention. Moreover, our analysis also highlights the need to investigate the negative valence of affect in entrepreneurship research (Delgado García, Quevedo Puente, and Blanco Mazagatos 2015). On the other hand, NA has no significant influence on PBC. We can explain this result based on the role of self-efficacy, one of the components of PBC. Individuals with NA cannot expand their information and knowledge because NA prompts a narrower focus (Foo, Uy, and Murnieks 2015). However, such a predisposition may not affect individuals' perception of their self-efficacy. Simply, they are not aware of the existence of this expanded information and knowledge. Baron (2007) proposes that NA induces individuals to reject or ignore entrepreneurial opportunities, yet he does not provide a feasibility analysis. Since PBC is related with feasibility (Krueger, Reilly, and Carsrud 2000), we find that individuals may reject these opportunities due to the influence of NA on ATE and SN, without considering PBC.

Additionally, we explore the relation between affective traits and entrepreneurial intention through affective personalities (Norlander, Bood, and Archer 2002; Garcia 2012). First, our results show that self-actualizing individuals (high PA/low NA) have the highest entrepreneurial intention. The high affective group (high PA/high NA) follows in entrepreneurial intention; while high PA increases these individuals' entrepreneurial intention, their high NA works as a counter to decrease entrepreneurial intention. This result is expected given that the impact of PA on the three antecedents of TPB is higher than that of NA, as the β -coefficients of the hypotheses show. A comparison of the self-actualizing group and the high affective group shows that the self-actualizing group has significantly higher entrepreneurial intention. Hence, for individuals in the high affective group, on the one hand their high PA promotes their entrepreneurial intentions. On the other hand, their high NA inhibits it and prevents them from developing their highest entrepreneurial intention, unless they can control their NA through emotional intelligence (Salovey and Mayer 1990).

Low affective individuals (low PA/low NA) are the third group in entrepreneurial intention. As such, their affect does not act on their entrepreneurial intention to either increase or decrease it. Compared to the high affective group, the low affective group has significantly lower entrepreneurial intention. Therefore, in terms of having entrepreneurial intention, it is more important to have high PA than it is to have low NA. This result is in line with the results of previous literature that highly activated affect favors entrepreneurial tasks (Foo, Uy, and Murnieks 2015).

Finally, self-destructive individuals (low PA/high NA) have the lowest entrepreneurial intention due to their high levels of NA with limited PA to counter its negative effects. However, entrepreneurial intention is not significantly different between low affective and self-destructive individuals. This finding again suggests that

having high PA is central to having strong entrepreneurial intentions: The lack of high PA lowers entrepreneurial intentions to a greater degree than does the presence of high NA. This result also suggests that PA constitutes an important trait for entrepreneurship above NA (Baron 2007).

Overall, the cluster analysis and ANOVA of affective personalities adds to the robustness of our previous results and confirms that the entrepreneurial intention of individuals is a reflection of the influence of affect on the three antecedents of TPB.

5.1 Practical Implications

This study also has implications for practice. First, understanding how affect influence the antecedents of entrepreneurial intention can be useful as a method of choice for different institutions that support entrepreneurship. For example, when different individuals request start-up money for a new business, funders can analyze the individuals' affective traits to help in the selection of entrepreneurial projects. Also, universities, which guide students toward future careers, should promote training courses related to affect and emotions (Labaki 2013). Particularly, emotional intelligence (Salovey and Mayer 1990), which has already been related with entrepreneurial intention (Rodrigues et al. 2019), could be a good option for students with high levels of NA who are considering a career related to entrepreneurship can learn to control this affect through emotional intelligence. This could increase the likelihood of their future success because they will be more resilient facing difficulties (Humphrey 2013). Finally, current trend among human resource managers is to include emotions management in their programs. These managers can focus on promoting employees' PA to boost the cognitive elements of entrepreneurial intention. In this way, employees can better develop their entrepreneurial intentions to lead future entrepreneurial projects within the firm (i.e. developing corporate entrepreneurship).

5.2 Limitations

Nevertheless, our research is not without limitations. First, the relationship between affect, cognition, and behavior is likely complex and multidirectional (Nikolaev, Shir, and Wiklund 2019). Our cross-sectional analysis, despite having certain benefits, does not allow us to make strong inferences regarding the causality of the proposed relations. Although theoretical arguments suggest a causal direction, the nature of the relations can only be assessed using a longitudinal research. Second, although samples of university students have the advantage of analyzing individuals of similar age and qualifications, which provides homogeneity to the sample, it does not allow us to determine whether the results can be applied to samples based on a broader population. Finally, our factors of PA and NA do not totally fit with previous affect scales such the Positive and Negative Affect Schedule (PANAS) or its expanded form, PANAS-X. However, we partially solve this problem by using second-order constructs to test the hypotheses that are formulated correctly.

5.3 Future Research

Finally, our study also suggests future research. For example, we could extend our model with an analysis of social capital, because the literature suggests that the PA is related individuals' social networks. Specifically, individuals with higher PA (lower NA) tend to have to more (less) extensive social networks (Lucas and Diener 2003; Baron 2008). Therefore, affect may be an antecedent of social capital (Hayton and Cholakova 2012) or perhaps social capital interacts with affect to develop the antecedents of entrepreneurial intention.

Furthermore, although PA has numerous positive consequences, the literature suggests that high levels of PA can also have drawbacks (Baron, Hmieleski, and Henry 2012). Thus, future research should examine whether businesses created by high PA entrepreneurs have a higher probability of business failure due to, for example, optimistic bias or planning fallacy. Furthermore, literature suggests that entrepreneurs have higher-than-average levels of PA (Hmieleski and Baron 2009). Future studies could whether these individuals have this PA prior to becoming entrepreneurs or whether their level of PA increases over the course of entrepreneurial experience, jointly to other important components to run a business such as empathy (Humphrey 2013)

Moreover, previous research finds that entrepreneurial passion, a concept related to affect (Cardon et al. 2009), influences self-efficacy and entrepreneurial intention (Biraglia and Kadile 2017). Entrepreneurial passion and affective traits likely work together to influence ATE and, especially, SN. Because entrepreneurial passion can be contagious (Cardon et al. 2009), if individuals perceive entrepreneurial passion in their reference people, they may increase their entrepreneurial passion and, therefore, their positive perception regarding entrepreneurship. Thus, future research may attempt to integrate the study of affective traits, entrepreneurial passion, and the antecedents of entrepreneurial intention.

Finally, future studies could investigate the impact of affective personalities (Norlander, Bood, and Archer 2002) on entrepreneurship. This line of inquiry represents an opportunity to use this typology in other entrepreneurial variables by, for example, considering which affective personalities do or do not favor (or not) the successful recognition and evaluation of entrepreneurial opportunities.

Notes

1 High correlation of SN with other TPB constructs might explain the lack of significance impact of SN on entrepreneurial intention, although SN and entrepreneurial intention are correlated. As can be seen in Table 5, SN are significantly and positively correlated with entrepreneurial intention ($r = 0.261$; $p = 0.000$), and with both ATE ($r = 0.378$; $p = 0.000$) and PBC ($r = 0.238$; $p = 0.000$). According to Woodside (2005), high intercorrelation between variables might lead to the effect of one of them on a dependent variable being insignificant even when said variable is significantly associated with the dependent variable. Such is the case of SN and entrepreneurial intention. Alternatively, it could theoretically be argued that SN affect ATE and PBC because the values transmitted by “reference people” would cause more favorable perceptions regarding ATE and PBC (Mathews and Moser 1995). Indeed, previous research has demonstrated that SN directly influence both ATE and PBC, and indirectly influence entrepreneurial intention (Liñán and Chen 2009). Including this effect in the model indicates that SN have a direct effect on both ATE ($\beta = 0.357$, $p = 0.000$) and PBC ($\beta = 0.189$, $p = 0.000$) and, therefore, an indirect effect on entrepreneurial intention ($\beta = 0.278$, $p = 0.000$). Consequently, either due to the interdependencies among the TPB variables or to the indirect effect of SN on entrepreneurial intention through ATE and PBC, we do not believe that SN are irrelevant for entrepreneurial intention. Therefore, SN’s influence on entrepreneurial intention should not be ruled out.

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