



Research Article

# Extending the Theory of Planned Behavior (TPB) by Examining the Decision-making Process of Individuals Starting a New Business: A Quantitative Analysis in Germany

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## Abstract

Starting a new business is a risky and complex decision with widespread consequences for the entrepreneur. But despite extensive research, it is still not clear which specific factors influence this choice on the individual level of the entrepreneur. Using the Theory of Planned Behavior (TPB) as a theoretical basis for the decision process, this study builds on previous qualitative research to shed more light on the social and personal factors determining the individual's decision to start a new business. Following a quantitative approach, data were collected via an online survey targeting entrepreneurs, resulting in 176 complete responses. The findings highlight that an economically oriented education significantly influences entrepreneurial attitudes, materialistic values are linked with subjective norms, and the individual's resilience positively affects perceived behavioral control (PBC). On the other hand, no influence on the decision was found for factors such as social influence, need for recognition, educational level, conscientiousness, and openness. Based on these findings, the study has two core contributions: First, it contributes to the refinement of TPB in the context of entrepreneurship by highlighting the individual's social and personal factors. Second, it provides valuable insights for educational initiatives and political decisions to foster entrepreneurial endeavors.

**Keywords:** Entrepreneurial behavior, Entrepreneurship, Theory of planned behavior

## Introduction and Aim of the Study

This paper presents a comprehensive examination of the preceding qualitative research (Jamitzky & Halaszovich, 2024) with the objective of validating the findings through a

causal analysis. The primary purpose of this study is to formulate and test hypotheses to evaluate the reliability and relevance of the preliminary findings. This evaluation is particularly important in terms of its connection to Ajzen and Fishbein's (1991) Theory of Planned

Behavior (TPB) (Ajzen (IV), 1991). Furthermore, this research focuses on linking the theoretical considerations to the practical decisions that lead individuals to start a business.

The decision to start a business is a complex and extensively researched topic in entrepreneurship. Despite extensive research, the question of which specific factors influence the choice to start a company still needs to be answered. The TPB was selected as the theoretical foundation for this study. This model was initially developed to explain general behavioral intentions and not specifically entrepreneurship (Tegtmeier, 2006; Lortie & Castogiovanni, 2015). However, by integrating social and individual factors, it can be extended and better adapted to the specific requirements and dynamics of entrepreneurship, resulting in a more precise and grounded theoretical framework. These findings are of great interest, as new businesses play a crucial role in fostering innovation and economic growth (BMWI - Bundesministerium für Wirtschaft und Klimaschutz (I), 2024).

The role of entrepreneurs and start-ups as drivers of societal and economic progress is widely acknowledged (Schaefer & Ternès, 2018). Company founders are seen as a crucial element in the creation of new employment opportunities, the advancement of innovation, and the augmentation of economic dynamism (Kane, 2010; BMWI - Bundesministerium für Wirtschaft und Klimaschutz (II), 2023). As indicated by the DE.DIGITAL platform, innovative entrepreneurs are of particular significance, as they frequently develop pioneering business models and technologies that alter existing markets and create new ones (BMWI - Bundesministerium für Wirtschaft und Klimaschutz (I), 2024).

Their high dynamism and flexibility enable them to respond expeditiously to changes and establish new trends (Daradkeh & Mansoor, 2023).

The TPB is a widely utilized model that predicts and explains behavior in certain situations (Krueger (I) & Brazeal, 1994). The TPB is fundamentally based on the assumption that behavior is based on intention and that this intention is influenced by three key factors: attitude towards behavior (attitudes), subjective norms, and perceived behavioral control (PBC). These constructs are particularly relevant for entrepreneurship research, as entrepreneurship is viewed as an intentional behavior (Joshi, et al.,

2020; Tegtmeier, 2006). In summary, the TPB assumes that the intention to perform a particular behavior is the most direct predictor of this behavior and is shaped by the three determinants mentioned.

The TPB offers a comprehensive framework for understanding planned behavior; however, it does not sufficiently address the specific influences of a founder (Lortie & Castogiovanni, 2015).

As Gundry and Welsch (2001) have observed in their review of the literature, and as other researchers have similarly noted in their examinations of the application of the theory of planned behavior (TPB) in the context of entrepreneurship, the role of individual influences and personality traits continues to lack sufficient detail; it remains unexplored in many studies (Gundry & Welsch, 2001). These specific influences are significant, as they directly correlate with the perception of opportunities and risks and the general willingness to engage in entrepreneurial activities (Lortie & Castogiovanni, 2015).

The primary objective of this study is to examine and validate the social and personal factors that influence the decision to start a business and to integrate these factors into the Theory of Planned Behavior.

A comprehensive literature review and a qualitative preliminary study were conducted to formulate specific hypotheses regarding the leverage of various personality traits and social factors on the decision to establish a company.

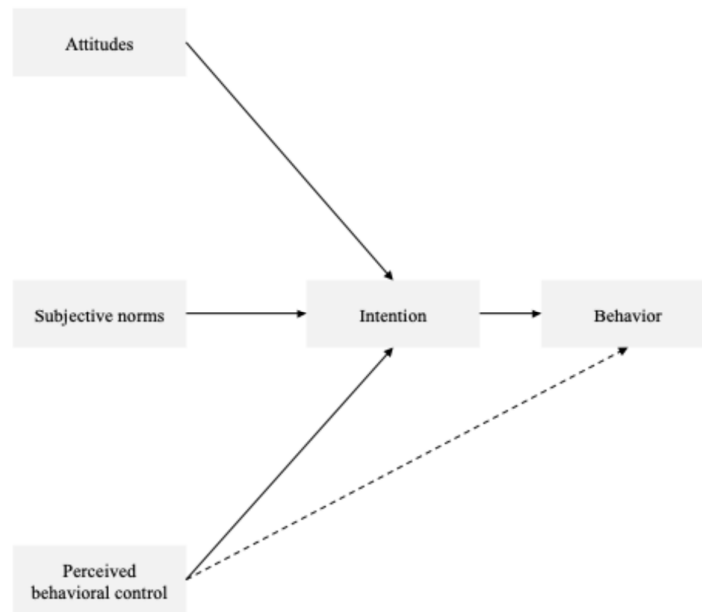
Building on these findings, this study examines the complex interactions between these traits and the decision to start a business. Quantitatively testing the hypotheses will provide a deeper understanding of the relevant influencing factors, and the theory of planned behavior in the context of entrepreneurship will be further developed. Moreover, the findings of this study should contribute to the closure of theoretical gaps and the formulation of practical implications for prospective founders and political decision-makers. In doing so, the objective is to establish a link between theoretical and practical considerations.

A more profound comprehension of the elements that affect the decision to start a business enables the formulation of targeted measures to assist prospective founders and further encourage the development of new companies.

The paper is structured as follows: The next section presents an overview of the TPB, which serves as the central theoretical foundation of this paper. Thereafter, the hypotheses are formulated and, subsequently, the formulated hypotheses are tested in the empirical analysis. The paper concludes with a discussion and critical appraisal of the results.

### Theory of Planned Behavior

The theory of planned behavior (TPB), developed by Ajzen and Fishbein (1991), is a widely utilized theoretical framework in various research fields (Böhm & Pfister, 2015). The model is based on the premise that behavior is predictable and explainable within specific contexts. The TPB assumes that behavior is based on intention, which is influenced by three antecedents (Vamvaka, et al., 2020; Joshi, et al., 2020). The theory is particularly relevant for research on entrepreneurship, as entrepreneurship is viewed as intentional behavior (Joshi, et al., 2020; Tegtmeier, 2006; Yasir, et al., 2021).



**Figure 1: Authors' own representation of the theory of planned behavior in accordance with Ajzen (2005)**



In accordance with the TPB, the process resulting in actual behavior is divided into three phases:

1. Determinants of Behavior
2. Intention
3. The execution of the behavior, in this case, the founding of a company.

Consequently, the establishment of a company is subject to a process of intention formation (Kibler, et al., 2015). Various factors influenced this intention in the preceding period of the individual's TPB process. The underlying elements attitude, subjective norms, and perceived behavioral control are explained in more detail below concerning entrepreneurship.

In entrepreneurship, *attitude* can be defined as the individual's assessment of starting a business as either positive or negative (Sabah, 2016). This evaluation is influenced by the expected outcomes of the action (Krueger (II) & Carsrud, 1993). For example, positive attitudes may arise when starting a business is associated with positive consequences such as personal satisfaction. In contrast, negative dispositions may be caused by the perception of risks, uncertainty, and potential failure. These associations discussed may be created by role models and narratives.

Likewise, subjective norms are defined as the perceived social pressure to perform or abstain from a particular behavior (Ajzen (V) & Fishbein, 1975). Regarding entrepreneurial endeavors, subjective norms describe how individuals perceive the expectations and attitudes of significant social reference groups, including family, friends, and professional networks. These reference groups can be both supportive and obstructive.

Similarly, the concept of perceived behavioral control, as defined by Ajzen (2006), depicts the degree to which an individual believes they possess the necessary skills, resources and capabilities, to perform a specific behavior successfully (Ajzen (III), 2006). In entrepreneurship, this translates to confidence in one's ability to initiate and manage a business successfully.

This idea is closely associated with Bandura's concept of self-efficacy (Bandura (I), 1997).

Given that entrepreneurship is typically regarded as a purposefully pursued behavior, it is reasonable to examine the rationale behind such behavior through the lens of the theory of planned behavior (Zumholz, 2002; Rybnicek, et al., 2019; Kolvereid, 1996; Bird, 1988; Yasir, et al., 2021; Vamvaka, et al., 2020; Joshi, et al., 2020; Tegtmeier, 2006; Krueger (III), et al., 2000; Lihua, 2022). Accordingly, the TPB is an appropriate methodology for investigating and explaining the foundations of entrepreneurial activity.

### **Prior Research**

The methodological approach utilized in the preceding study (Jamitzky & Halaszovich, 2024) was grounded in a qualitative research design. The principal objective of this research was to gain deeper insights to identify potential determinants (influencing factors) that could affect an individual's decision-making process regarding the establishment of an entrepreneurial venture. As part of the preceding qualitative study, interviews were conducted with a heterogeneous group of entrepreneurs to understand their diverse entrepreneurial experiences and perspectives comprehensively. Specifically, twelve business founders (n=12, F=3, M=9) from different sectors were consulted. This methodological approach was designed to capture a broad spectrum of perspectives and extensively examine the complexity and motivations driving the entrepreneurial decision-making processes.

The analysis of the interviews revealed that the participants' statements could be classified into eight distinct main categories:

1. social influence through family, friends and extended social environment.
2. influence through an economics-oriented education,
3. need for appreciation,
4. materialistic values,
5. level of education,
- 6.

conscientiousness, 7. openness and 8. resilience.

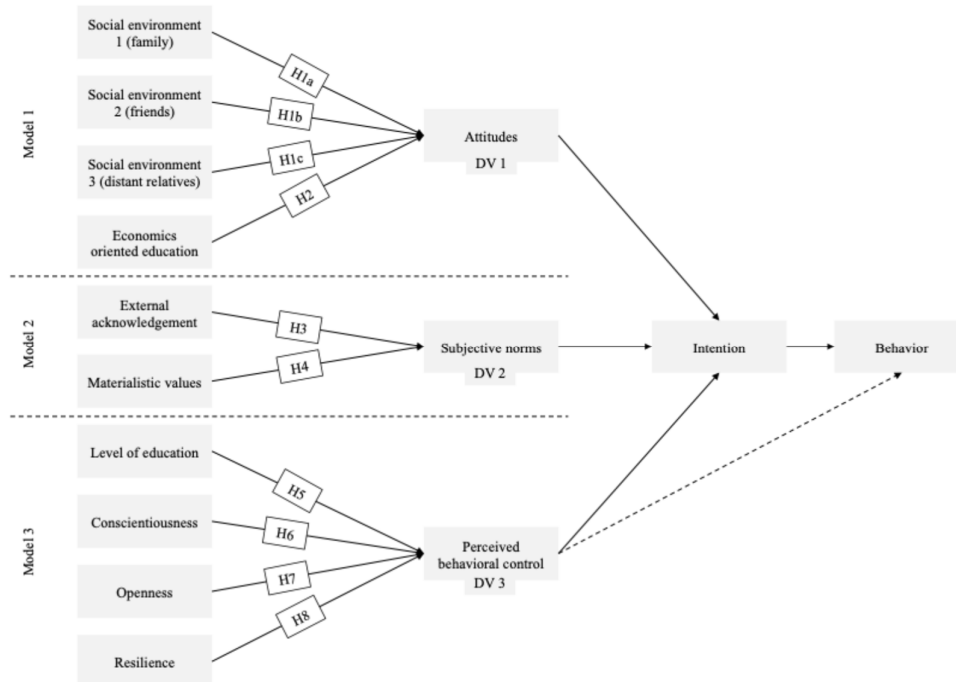
In order to describe the influencing aspects that encourage potential founders to set up a company more precisely, links to the Theory of Planned Behavior were identified as part of the evaluation process.

This paper focuses on investigating social influences and their impact on the decision to start a business. Prior research, including that of Bandura (1986) and Turner (1991), has already indicated the significance of the social environment in the development of behavior (Bandura (II), 1986; Turner, 1991). In the context of the TPB, the leverage of significant others is typically represented by subjective norms (Ajzen (I), 2005; Tegtmeier, 2006). However, the preliminary study results indicate that the social environment is more likely to

influence attitudes toward starting a business than subjective norms. This differentiation is of central importance for further research. The findings of the qualitative study imply that positive attitudes towards starting a business are shaped by social role models and narratives, suggesting that, in this specific context, an extension of the TPB is feasible. The eight categories from the analysis provide a cohesive overview and serve as a foundation for formulating ten specific hypotheses to be validated in this quantitative study. In addition, they ascertain whether there is a correlation with the TPB.

As a result, ten hypotheses were formulated, discussed in greater detail below.

## Hypotheses



**Figure 2: Representation of the Hypotheses**

### **Influence through the Social Environment**

Bandura (1986) and Turner (1991) have already identified the social environment as a relevant influence in the development of behavior (Bandura (II), 1986; Turner, 1991).

Although relevant research on the TPB states that the influence of peers is represented by subjective norms, evidence from the first research suggests that the impact of the social environment has a more substantial effect on attitudes toward entrepreneurship than on subjective norms. This is attributed to forming positive associations with entrepreneurial activity through the social context (Schobert, et al., 2015; Witt, 2004). Starting a business as a response to perceived social pressure to perform or refrain from a certain behavior, as defined by subjective norms (Böhm & Pfister, 2015; Dinc & Budic, 2016), does not seem to apply here.

In previous research, other authors have found a positive correlation between social influence and personal mindset toward the intended behavior in the context of other action intentions.

Stark and Hössinger (2015), for example, investigated the influence of peer groups on adolescents and observed that perceived peer behavior (behavior of a social group with high influence) correlated only weakly with subjective norms (even though both cases involved social reference groups), but significantly more with attitude and PBC (Stark & Hössinger, 2015).

This insight suggests that peers' behavior is not perceived as a source of stressful pressure to meet expectations but instead as a positively perceived, easy-to-implement, and desirable practice (Stark & Hössinger, 2015; Jochims, 2019; Witt, 2004). Furthermore, it can be assumed that the role model function of parents and friends exerts the most significant influence on decision-making (Stark & Hössinger, 2015). This assumption can be explained by considering Bandura's theory of social learning (1977). According to this theory, individuals learn through observation, imitation, and modeling. Parents and friends are direct models for behaviors, attitudes, and decision-making processes (Bandura (III), 1977). The influences are particularly formative, as young people tend to spend a significant amount of time with these social groups.

Moreover, parents and friends often provide support and encouragement. This support can extend to different areas of life, such as education, career decisions, or personal development (Deli-Kolros, 2020). Young people's encouragement and feedback from these peers can be highly motivating and influential concerning decision-making. Close and regular social contact heightens this exerted guidance further.

Based on the initial research results, the authors assume a connection between the impact of the social environment and the attitude toward starting a business. In this context, three distinct social groups have been identified as key influencers in shaping perspectives:

**Table 1: Social environment**

<b>Social environment</b>	<b>H</b>
Family	H1a
Friends	H1b
Extended social environment (distant relatives)	H1c

H1a: The more robust the entrepreneurial example set by the family, the greater the influence of this independent variable on an individual's attitude (dependent variable) towards starting a business.

H1b: The more robust the entrepreneurial example set by friends, the greater the influence of this independent variable on an individual's attitude (dependent variable) towards starting a business.

H1c: The more robust the entrepreneurial example set by the extended environment, the greater the influence of this independent variable on an individual's attitude (dependent variable) towards starting a business.

Extended environment does not refer to family or close friends, but to so-called acquaintances. In contrast to family and friends, the extended environment consists of people who interact less frequently and less intensively with the individual, but who can nevertheless exert an important influence. These include acquaintances, colleagues, professional networks, mentors and other social contacts outside the close circle of family and friends. The extended environment often provides access to new ideas, information, resources and support that are not available in the immediate social circle. These contacts can be inspiring role models or valuable resources that encourage and support the individual to consider and implement a new business.

### **Influence through an Economics-oriented Education**

The economic background of the entrepreneurs was identified as an additional factor that may impact their attitude toward starting a business. In this case, economic background refers to an early exposure to economic education or a general interest in economics.

A rising number of academic studies are examining the impact of education on career decisions (Lihua, 2022; Roy, et al., 2017; Fayolle & Gailly, 2015).

Educational institutions hosting courses and programs related to entrepreneurship promote the idea of starting a business as an attractive and rewarding career option. Positive opinions toward entrepreneurship are fostered by conveying success stories and emphasizing the importance of entrepreneurs for the economy. As a result, individuals may be more inclined to start their businesses (Fayolle & Gailly, 2015). The prior study (Jamitzky & Halaszovich, 2024) indicated the potential correlation between entrepreneurs' initial economic engagement and their subsequent pursuit of specific educational pathways, ultimately shaping their careers as business founders. According to eight out of twelve company founders interviewed, their interest in economic topics was sparked early in their lives (Jamitzky & Halaszovich, 2024). This early interest appears to have played a formative role in their educational choices and subsequently influenced their decision to pursue Entrepreneurship as a career.

H2: An individual's attitude towards starting a business is influenced by their participation in business-oriented training and/or academic courses of study.

### **External Acknowledgement/Recognition**

The analysis of the interviews implies that the entrepreneurs expressed a general desire for recognition in connection with their entrepreneurial activities (Jamitzky & Halaszovich, 2024). This need for recognition from others may be related to subjective norms (Oeynhausen & Ulrich, 2020).

For instance, Oeynhausen and Ulrich (2020) examined the need for social recognition in the context of career choice. The researchers concluded that the pursuit of social recognition in career choice is primarily based on occupational characteristics, which, from the perspective of the individuals in question, lead to a positive perceived response from third parties (Oeynhausen & Ulrich, 2020).



These findings are consistent with the results of other publications that also address the significance of social identity needs in career choice (Eberhard, et al., 2015; Granato, et al., 2016; Matthes, 2019). Experiencing social recognition is a central motive when choosing a career. Their analysis highlights two relevant decision criteria: the presumed reactions of the social environment and being perceived as educated (Eberhard, Matthes, & Ulrich, 2015).

The authors assume that the need for recognition is a significant motivating factor for individuals pursuing entrepreneurial endeavors. Therefore, this need for recognition may be a key influencing factor in shaping subjective norms. The reference to subjective norms is based on the assumption that recognition is a reaction of the social environment (Ajzen (IV), 1991). This leads to the formulation of the following hypothesis to be tested:

H3: The stronger the need for recognition, the greater this factor affects the formation of the subjective norm, which, in consequence, shapes the individual's behavior in initiating a business venture.

### **Materialistic Values**

A number of the interviewees made statements indicating that materialistic values influenced their decision to start a business (Jamitzky & Halaszovich, 2024).

Amit, MacCrimmon, Zietsma, and Oesch (2001) tested a similar hypothesis exploring the importance of money for entrepreneurs. They ultimately reached the opposite conclusion, stating that entrepreneurs attach less importance to achieving personal wealth. No statistically significant difference was found between entrepreneurs and non-entrepreneurs (Amit, et al., 2001).

However, a study by Oeynhausen and Ulrich (2019) identified a positive correlation between young people's career choices and pursuing a high-income profession (Oeynhausen & Ulrich, 2020). If entrepreneurship is defined as an

"occupation", this career path is one of the highest-earning occupations according to statistical average salaries (Kmeta, 2015).

These data lead to the assumption that materialistic values influence entrepreneurs.

Hypothesis H4, which posits that materialistic values influence subjective norms, is based on several theoretical and empirical considerations drawn from the literature on socio-psychological and entrepreneurial research. Individuals prioritizing materialistic values tend to make decisions that maximize their material well-being (Chaudhary & Dey, 2020; Fatoki, 2015).

Subjective norms are defined as the perceived social expectations and pressures to pursue or avoid certain behaviors (Ajzen (IV), 1991). Therefore, in cultures with predominantly materialistic values, the social pressure to demonstrate financial success may encourage entrepreneurial behavior as a means to achieve financial goals.

H4: The greater the degree of materialistic values, the stronger the impact on the subjective norm regarding initiating a business venture is.

### **Level of Education**

As the interviews have revealed, the degree of education is a relevant influencing factor in establishing a company, and recent empirical surveys further emphasize this.

The German Start-up Monitor (2023) indicates that 84.5% of start-up founders possess an academic degree. Degrees in business administration, economics, or similar fields accounted for 37.8%, while engineering represented 24.6%, and IT-related courses amounted to 14.5% (Kollmann, et al., 2023).

Additionally, Meyer and Meyer (2021) conducted research into how educational backgrounds affect start-ups, with the result that the level of education among promising entrepreneurs is remarkably high (Meyer &

Meyer, 2021). Indeed, over three-quarters of founders have at least a master's degree or even a doctorate (Meyer & Meyer, 2021).

As a consequence, numerous researchers have identified entrepreneurs' academic credentials as a significant component of their human capital (Marvel & Lumpkin, 2007; Roberts, E., 1991; Shane & Venkataraman, 2000; Fischer, 2020). The prevailing conclusion is that formal education facilitates the development of knowledge, skills, and perspectives (Becker, 1994).

The authors hypothesize that individuals with economically relevant skills and comprehensive professional knowledge are better equipped to evaluate their plans and exert greater control over their actions. This self-assessment and perceived behavioral control are conceptualized within the Theory of Planned Behavior as perceived behavioral control (Ajzen (IV), 1991).

This leads to the following hypothesis:

H5: The higher a person's level of education, the stronger its positive effect on PBC. People with a high level of human capital have a high level of perceived control over their entrepreneurial activities.

### **Inclination for Organization / Conscientiousness**

Researchers such as Utz Krüsselberg (1993) or Ratten & Ferreira (2016) have previously discovered a strong tendency towards organization among entrepreneurs, also known as organizational talent (Krüsselberg, 1993; Ratten & Ferreira, 2016). These findings are consistent with those obtained from the previously conducted interviews (Jamitzky & Halaszovich, 2024).

Studies by Zhao and Seibert (2006), Postigo et al. (2021), and Rauch and Frese (2007) have demonstrated that conscientiousness is positively correlated with entrepreneurial success (Zhao (I) & Seibert, 2006; Postigo, et al., 2021; Rauch & Frese, 2007). This is partially attributable to enhanced organizational skills and a higher perceived level of control over entrepreneurial

activities (Zhao (I) & Seibert, 2006; Postigo, et al., 2021; Rauch & Frese, 2007). In differential psychology, the personality trait of conscientiousness is typically associated with organizational strength and a proclivity for orderliness (Miller, et al., 1999; Brandstätter, 2010).

Based on several meta-analyses, Brandstätter (2010) analyzed how personality traits such as conscientiousness influence entrepreneurial activity. Organizational skills associated with high conscientiousness are arguably associated with greater perceived control over the creation and management of a company.

These findings suggest that entrepreneurs with strong organizational competencies are likely to have higher perceived behavioral control as they are confident in their ability to manage the various aspects of a business.

H6: There is a positive relationship between the level of conscientiousness, organizational affinity, and the perceived behavioral control needed to start a business.

### **Willingness to Experimentation**

According to the literature, entrepreneurs' willingness to experiment can be classified as a critical function in the system of innovation and is already an established phenomenon (Lindholm-Dahlstrand, et al., 2018). The findings of the preliminary study support that observation, as they revealed that the entrepreneurs interviewed demonstrated a general openness to new ideas and a fundamental willingness to experiment (Jamitzky & Halaszovich, 2024).

The term experimentalism refers to an individual's willingness to engage in new experiences and assume risks (Zellweger, et al., 2019). In the context of entrepreneurship, this can lead to a heightened sense of confidence in developing and implementing innovative business ideas, influenced by the willingness to experiment.

Likewise, in personality research, the willingness to experiment is typically operationalized by the openness scale of the five-factor model (Kerr, et al., 2018).

H7: A positive relationship exists between the degree of openness to new ideas, the willingness to experiment, and the perceived behavioral control.

### **Self-efficacy and Resilience**

*Self-efficacy* is an individual's confidence in their ability to successfully overcome challenges based on their skills and actions (Bandura (I), 1997). Self-efficacy plays a crucial role in the context of resilience (Reichhart & Pusch, 2023).

Almost all interviewees classified aspects related to self-efficacy and resilience as relevant. One of the interviewed entrepreneurs stated that he had to resist a military deployment to establish his business successfully (Jamitzky & Halaszovich, 2024).

Individuals who self-report high levels of self-efficacy demonstrate a profound trust in their ability to master specific situations effectively (Bandura (I), 1997). In this case, the entrepreneur faces several challenges when starting a business. The way these entrepreneurs see themselves enables them to view potential stressors as manageable challenges rather than threats (Bechtold, 2003; Zhao (II), et al., 2014). This perspective facilitates the adaptation to changing circumstances and enhances persistence during setbacks and obstacles, which can be regarded as an indicator of greater resilience (Folke, et al., 2010). Both skills are essential for establishing a company, as they influence how an individual approaches challenges and whether they believe in realizing their business ideas (Dinc & Budic, 2016).

H8: The higher the levels of self-efficacy and resilience, the stronger the influence on the perceived behavioral role.

The methodological approaches are presented in more detail hereafter.

### **Methodology (Research Design)**

This study is based on a quantitative research design, and its fundamental characteristics are discussed below. This analysis aims to verify and elucidate the findings from the preceding study, whose primary purpose is to explain the individual correlations with the aspects of the Theory of Planned Behavior. In order to test the hypotheses, it was necessary to obtain primary data from entrepreneurs. For this investigation, a standardized online survey was developed.

The survey was pretested with 24 respondents from March 7 to March 12, 2024, to examine the reliability of the survey method.

Afterward, the central survey was conducted between March 15, 2024, and April 15, 2024.

For this study, the target group consisted of adult entrepreneurs, self-employed individuals, and freelancers who managed their businesses as their primary source of income. Exclusively German-speaking company founders were surveyed.

Various distribution methods and channels were utilized to reach a sufficient number of study participants. The attendees were contacted via repeated posts on social media platforms, including LinkedIn and Facebook. Furthermore, 209 business associations and chambers of industry and commerce were approached with a request to distribute the survey. In particular, the following organizations and associations administered the study within their respective networks: Unternehmensverbandsgruppe e.V., DER MITTELSTAND. BVMW e.V., the Handwerkskammer Braunschweig-Lüneburg-Stade, and the Association of Entrepreneurs and the Self-Employed Germany (VGSD e.V.).

Gaining access to the target group of entrepreneurs proved to be particularly difficult. Hence, an additional 240 postcards were sent to entrepreneurs, asking them to complete the questionnaire.

During the preparation of the questionnaire, great value was attributed to ensuring it was based on pertinent literature. The complete questionnaire can be found in the appendix. The composition of the questionnaire is described in the following section.

The questionnaire began with a declaration of consent, confirmation that the participants were adults, and an explanation of the research context. Furthermore, a selection question was included to ascertain whether the subjects were, in fact, entrepreneurs.

The primary section of the questionnaire was composed of seven blocks of questions.

1. The first block of questions contains items regarding the social influence of family, friends, and distant relatives. The items were adapted from Krueger, Reilly, & Carsud (2000) and Engle, Schlaegel, & Delanoe-Gueguen (2011) and subsequently incorporated into the questionnaire. Two dichotomous items and six five-point Likert scale items were included.
2. The second block of questions aims to measure the construct of the Theory of Planned Behavior (TPB). The items from Ajzen (2006) were adapted to align with the specific context of entrepreneurship. It should be noted that the intention and behavior components of the TPB were not included in this measurement, as the behavior of "starting a business" had already been completed by all participants at the time of the survey. Ten items were included on a five-point Likert scale.
3. The third block of questions is intended to measure the need for recognition. Items from the Social Desirability Scale, as proposed by Stocké (2003) and Crowne & Marlow (1960), were used as a model and tailored to fit the specific context of this study.

The scale comprises five items, each rated on a five-point Likert scale.

4. The fourth block of questions was developed to facilitate the measurement of materialistic values. For this purpose, seven out of fourteen items from Fatoki (2015) were added to the survey. Seven items are presented on a five-point Likert scale.
5. The fifth block of questions is structured to evaluate the personality traits of experimentalism and affinity for organization. These traits are assessed using the scales of the five-factor model. The complete BFI-10 Inventory questionnaire, as outlined by Rammstedt, Kemper, Klein, Beierlein, & Kovaleva (2012), was employed for this purpose. The Big 5 personality trait openness operationalizes experimentation in all its basic characteristics (Kerr, et al., 2018). In differential psychology, the Big 5 personality trait of conscientiousness is often associated with organizational strength and a love of order (Miller, et al., 1999; Brandstätter, 2010). Ten items were included on a five-point Likert scale.
6. The sixth block of questions is designed to measure self-efficacy and resilience. The items for this section were based on the work of Beierlein, Kovaleva, Kemper, & Rammstedt (2014). Three items are presented on a five-point Likert scale.
7. Scheuch (1973) suggests that items requiring less attention should be placed at the end of the questionnaire (Scheuch, 1973). Consequently, the socio-demographic data were surveyed at the end. Items on economic background, training, studies, and level of education are particularly relevant for testing the hypotheses.

## Analysis

### *Response statistics and data validation*

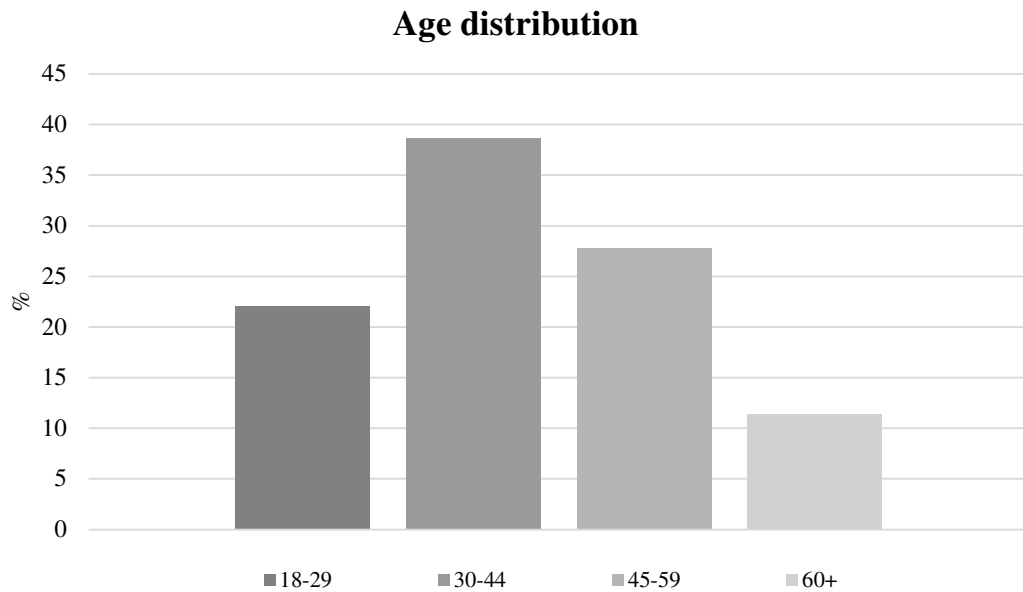
A total of 417 individuals participated in the survey, of which 242 completed it. Prior to evaluating the results, it is essential to ensure the quality of the data set. For this purpose, the dataset was refined using the following criteria:

1. Does the respondent fall within the target group of entrepreneurs?

2. Examination of cases exhibiting minimal variance in response behavior across all constructs, commonly referred to as "click-throughs."

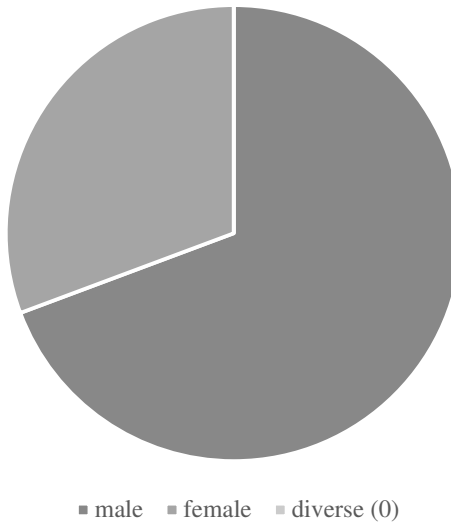
### *Descriptive analysis*

Following the data cleansing process, a dataset consisting of **n=176** complete cases was generated.



**Figure 3: Analysis, Age distribution**

## Gender distribution



**Figure 4: Analysis, Gender distribution**

**Table 2: Analysis, Level of education**

	%
No level of education or secondary school leaving certificate	3.4
Secondary school certificate	6.3
High school diploma	1.7
Completed training	17.0
Bachelor, 1st state examination	15.9
Master, 2nd state examination	47.7
Doctorate	8.0

### Analysis

Some of the scales were generated by recoding the individual (negatively polarized) scales as required. Subsequently, the items that belonged together were combined into scales developed using means. The results remain unchanged when the items are summarized by factor analysis instead of calculating means.

The following table shows the calculated internal consistencies (reliability). Based on the literature, it is assumed that values above .700 indicate an acceptable internal

level of consistency (Tavakol & Dennick, 2011; Bland & Altman, 1997; DeVellis & Thorpe, 2022; Schmitt, 1996). However, some values do not reach the threshold of .700, which may be due to the number of items and heterogeneity of the constructs (Tavakol & Dennick, 2011). Schmitt (1996, p. 352) states: "When a measure has other desirable properties, such as meaningful content coverage of some domain and reasonable one-dimensionality, this low reliability (Schmitt uses an example of the value  $\alpha = 0.49$ ) may not be a major impediment to its use." According to Schecker (2014), this statement is

particularly relevant from a didactic perspective when, as in this case, challenging constructs are to be operationalized with standardized tests

(Schecker , 2014). We followed this view and included all listed constructs accordingly.

**Table 3: Analysis, Internal consistency of the scales**

Scale	Number of items/ inverted items	Cronbach's Alpha
Attitude	3	.623
Subjective Norms	3	.640
Perceived behavioral control (PBC)	4	.591
Social environment 1 (family)	2	.777
Social environment 2 (friends)	2	.790
Social environment 3 (distant relatives)	2	.743
External acknowledgement	5	.784
Materialistic values	7/2	.857
Conscientiousness	2/1	.643
Openness	2/1	.575
Resilience	3	.738

The bivariate correlations explicitly display that the correlations vary in strength. The

dependencies can be interpreted as weak to moderately strong (Duller, 2019).

**Table 4: Analysis, bivariate correlations**

	M	SD	1	2	3	4	5	6	7	8	9	10
Attitude	4.48	.47										
Subjective Norms	3.80	.67	.236**									
PBC	4.24	.54	.450**	.351**								
Social environment 1	3.72	1.08	.058	.485**	.170*							
Social environment 2	3.72	1.05	.139	.482**	.185*	.529**						
Social environment 3	2.56	.90	.112	.107	.014	.279**	.388**					

External acknowledgment	3.64	.77	.206**	.250**	.261**	.364**	.389**	.276**				
Materialistic values	2.65	.83	.182*	.281**	.232**	.302**	.342**	.183*	.517**			
Conscientiousness	4.32	.69	.411**	.163*	.361**	.192*	.160*	.177*	.325**	.303**		
Openness	4.13	.84	.271**	.247**	.254**	.233**	.224**	.199**	.389**	.349**	.612**	
Resilience	4.36	.48	.444**	.178*	.379**	.116	.147	.146	.139	.291**	.492**	.386**
p<.05*												
p<.01**												

*Bivariate correlations according to Pearson, Bootstrapping X1000*

### Testing of Hypotheses

A multiple linear regression model is calculated for each of the hypothesis

bundles H1a-c through H2 (Model 1), H3 through H4 (Model 2), and H5 through H8 (Model 3).

**Table 5: Analysis, multiple linear regression model**

		Model 1 DV=Attitude	Model 2 DV=Subjective Norm	Model 3 DV=PBC
H1a	Social environment 1	-.076		
H1b	Social environment 2	.127		
H1c	Social environment 3	.100		
H2	economics-oriented education (1=yes)	<b>.171*</b>		
H3	External acknowledgement		.141	
H4	Materialistic values		<b>.208*</b>	
H5	Level of education			.013
H6	Conscientiousness			.143
H7	Openness			.022
H8	Resilience			<b>.303**</b>
	R <sup>2</sup> <sub>adj</sub>	.035	.083	.149
	F-Statistic	<b>(4) 2.594*</b>	<b>(2) 8.902**</b>	<b>(4) 8.614**</b>
	p<.05* p<.01**			



Regarding Model 1, a significant F-test of the coefficient of determination ( $F(4)=2.594^*$ ) indicates significantly different explanatory power compared to the reference model. The explained variance is 3.5%.

The economic influence, represented here as a dichotomous and nominal characteristic, shows a positive and significant correlation with the attitude [ $B=.171^*$ , CI95% (.019; .291)]. **Hypothesis 2 can, therefore, be accepted.**

With respect to model 2, a significant F-test of the coefficient of determination is evident ( $F(2)=8.902^{**}$ ), which implies a substantially different explanatory power compared to the null model. The variance resolution is set at 8.3%. The materialistic value concept shows a positive and statistically relevant correlation with the subjective norm [ $B=.208^*$ , CI95% (.031; .302)]. **Therefore, hypothesis 4 can be accepted.**

For Model 3, there is a substantial F-test of the coefficient of determination ( $F(4)=8.614^{**}$ ), which suggests that the explanatory power is considerably different from that of the null model. The explained variance is 14.9%.

Resilience positively correlates with PBC [ $B=.303^{**}$ , CI95% (.156; .516)].

**Hypothesis 8 can, therefore, be accepted.**

#### Diagnostics

Regarding the residual diagnostics of Model 1-3, there were no autocorrelations, as the Durbin-Watson statistics are valued at 1.885 (model 1), 1.911 (model 2) and 1.615 (model 3). Furthermore, all VIF data points are lower than 5, which rules out the multicollinearity of the predictors.

In addition, the residuals of the three models do not display a typical distribution (Shapiro-Wilk(175)=.955,  $p<.001$ , model 1), ((175)=.967,  $p<.001$ , model 2) and ((175)=.935,  $p<.001$ , model 3).

Furthermore, the scatter plot of the standardized residuals and the

standardized estimated values do not show any conical pattern of the point cloud. Consequently, heteroscedasticity can be ruled out.

Model 1: Concerning the linearity of the parameters, it is evident that the three metric characteristics of social influence show consistently linear correlations with DV1 (attitude).

Model 2: With regard to the linearity of the parameters of Model 2, it can be determined that the two metric characteristics - Recognition and Materialistic values - do not show any linear correlations with the DV2 (subjective norm).

Model 3: Regarding the linearity of the parameters of Model 3, it can be determined that the four metric characteristics of educational level, conscientiousness, openness, and resilience show consistent linear correlations with the DV3 (perceived behavioral control).

#### Discussion/Conclusion

The objective of this study was to gain a deeper understanding of the decision to start a business

by extending the theory of planned behavior. For this purpose, social and personal factors influencing attitudes toward starting a business (attitudes), subjective norms, and perceived behavioral control were examined. The primary findings of the present research study suggest that an economic mindset, materialistic values, and resilience are significantly related to the TPB, as mentioned before. These results have far-reaching implications for entrepreneurship research and practice.

These findings illustrate that an economic background exhibits a robust positive influence on the attitude towards starting a business. It can be concluded that individuals with an economically orientated education or a general economic interest tend to express a greater interest in establishing a business. This insight entails considerable implications for educational programs, as educational institutions are

expected to integrate an increased proportion of entrepreneurial content into their programs. Courses in business administration and related fields could positively influence attitudes toward starting a business. In addition, early business education at school could increase start-up activity in the long term by promoting positive associations with entrepreneurship. From a theoretical stance, this discovery supports the TPB and expands it to include the aspect of economic characterization. As a result, the TPB can be refined by including economic education and its influence on attitude.

Furthermore, the investigation revealed that materialistic values correlate significantly positively with subjective norms. It is thus suggested that individuals who highly value material goods also experience tremendous social pressure to start a business. As such, there are implications for the culture and values in different societies, especially in cultures where materialistic values are predominant. Portraying entrepreneurial activities as a means to achieve material wealth could be encouraging. Moreover, entrepreneurship programs' marketing and communication strategy could purposefully address materialistic values to reinforce entrepreneurial intentions. By theory, this extends the TPB by showing that materialistic values can be seen as an upstream dimension of subjective norms. Consequently, applying and validating the theory in different cultural contexts may be facilitated.

Lastly, the study discovered that resilience significantly connects to perceived behavioral control. According to this, people with high resilience are more confident in overcoming the challenges associated with starting a business. This insight carries major ramifications for training and coaching, as programs for developing resilience and self-efficacy can help potential founders to better prepare for entrepreneurial challenges and strengthen their perceived control regarding the start-up process. Furthermore, networks and support programs to enhance resilience could positively influence start-up activity.

The TPB can, in theory, be expanded by including resilience as a relevant factor that influences perceived behavioral control. Thereby, the theory could become more comprehensive and explain individual differences in the perception of challenges more effectively.

### **Rejected Hypotheses**

In addition to the confirmed hypotheses, several assumptions were refuted. For example, it was shown that social influence from family, friends, and the extended environment is not significantly related to the attitude toward starting a business. These results suggest that direct imitation or the pressure exerted by close peers has less influence on the attitude to start a business than initially expected. They perhaps imply that individual beliefs and intrinsic motivation are more potent drivers of the decision to start a business than external social influences. Consequently, there are implications for the design of support programs, which should prioritize empowering individual beliefs and skills rather than mobilizing the social environment.

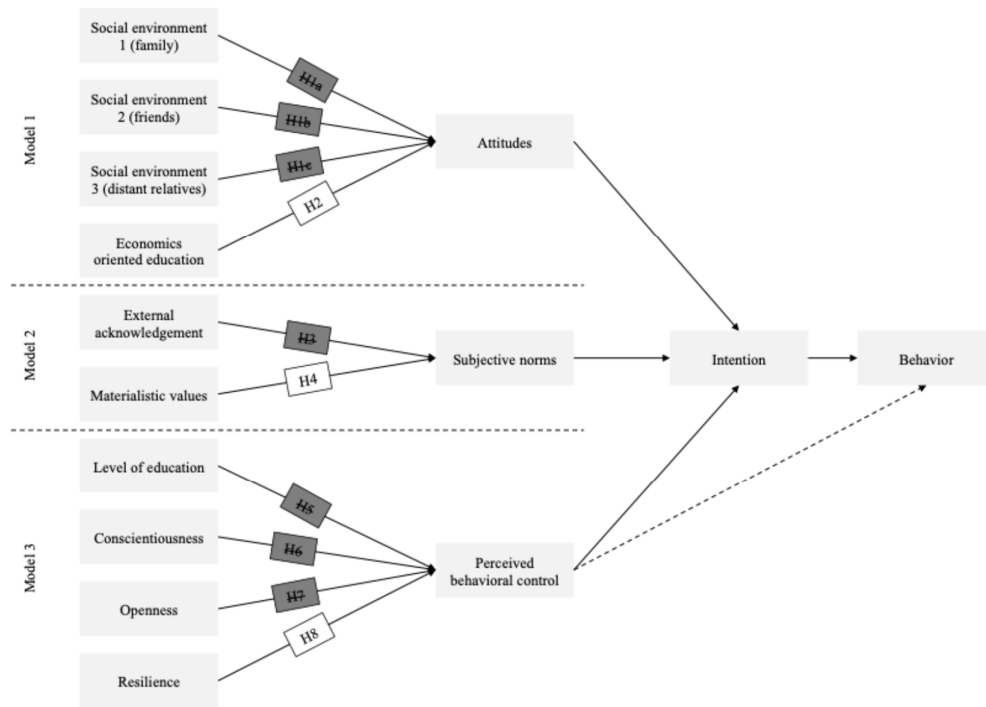
Additionally, this study invalidated the assumption that the need for recognition has a relevant influence on subjective norms. The hypothesis was based on the premise that the desire to be socially recognized by the immediate environment strongly influences the perception of social expectations and, thus, the intention to establish a company. The disconfirmation of this theory could indicate that the demand for recognition is an essential personal motivator but does not generate sufficient pressure to influence subjective norms concerning entrepreneurial behavior. Recognition and social affirmation may instead act as secondary factors, while other sources of motivation, such as personal convictions and individual goals, are predominant.

The level of education, conscientiousness, and open-mindedness likewise had no significant connection with the perceived behavioral control, thereby refuting the assumption that a high educational degree

and specific personality traits affect the perception of an individual's ability to start a business. These results suggest that other variables, possibly specific entrepreneurial experience or specialized training, could fulfill a higher function. In practical terms, it can be concluded that initiatives to support founders may be more effective if they emphasize practical experience and specialized training rather than focusing solely on formal education and personality traits.

the context of business start-ups. Economic molding, materialistic values, and resilience are essential factors influencing attitudes, subjective norms, and perceived behavioral control. Simultaneously, the disproved hypotheses indicate that the role of the social environment, the desire for recognition, formal education, and personality traits may be less relevant than previously assumed. These findings provide valuable insights for designing educational programs, cultural initiatives, and support programs promoting start-up activity.

In conclusion, the knowledge acquired in this study contributes to refining and expanding the theory of planned behavior in



**Figure 5: Representation of the accepted and rejected Hypotheses**



## Limitations and Implications for Further Research

Future research could investigate the factors analyzed further and validate the TPB in different cultural and economic contexts. The educational attainment factor is one example of the limitations of this study. Researchers in the future might, for instance, discuss that this research was not based on high-tech founders but that the results reflect the broad range of entrepreneurial activities. High-tech ventures, however, often face unique challenges such as rapid technological change and higher capital requirements, which may influence the applicability of the TPB. In particular, the sample did not include high-tech founders but instead comprised a wide range of start-ups, which could limit the generalizability of the results.

Contrary to the approach adopted in this thesis, it would be interesting to research the conventional theory of the TPB since the social environment may have a relevant influence on subjective norms.

Secondly, the assumption that the social environment influences attitudes rather than subjective norms contradicts conventional research on TPB. Future studies should explore the extent to which the social environment affects subjective norms.

Additionally, the quantitative methodology and the reliance on self-reported data may lead to biases. Ongoing studies should employ triangulated methods and longitudinal designs to understand the causality in more depth.

Several suggestions have emerged based on these limitations and this study's findings. Firstly, it may be worth investigating specific groups of founders, such as high-tech founders, to determine whether the identified correlations apply in these particular settings.

Longitudinal analyses could provide valuable insights into the dynamics of attitudes and behavioral intentions over time and help improve understanding of the long-term effects of economic conditioning and resilience. Applying and validating the TPB in different cultural contexts could reveal how cultural values and norms shape the intention to establish a new company. This may be particularly informative for societies with different economic and social structures.

Finally, adding additional dimensions to the TPB could be beneficial, such as specific entrepreneurial experiences or special training programs to improve the understanding of perceived behavioral control.

These recommendations are designed to refine and extend the Theory of Planned Behavior to provide a deeper and more comprehensive understanding of

the factors influencing the decision to start a business. Considering these aspects, future research can bridge theoretical gaps and provide practical implications for potential founders and policymakers. The objective would be to construct a link between theory and practice and thus further promote start-up activity.

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