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Abstract

Applying a life span approach of human development, this study examined pathways to entrepreneurial success by analyzing retrospective and current data. Along the lines of McClelland’s ideas of early entrepreneurship development and Rauch and Frese’s Giessen-Amsterdam model on venture success, we investigated the roles of founders’ adolescent years (early role models, authoritative parenting, and early entrepreneurial competence), personality traits (Big Five pattern), and entrepreneurial skills and growth goals during venture creation. Findings were derived from structural equation modeling studying two comparable samples of founders ($N = 531$) and nascent founders ($N = 100$) from Germany. Across both samples, reports on age-appropriate entrepreneurial competence in adolescence and an entrepreneurial Big Five profile predicted entrepreneurial skills during venture creation, which in turn predicted founders’ setting of ambitious growth goals and entrepreneurial success. Early entrepreneurial competence was related to the availability of entrepreneurial role models and authoritative parenting during adolescence as well as to an entrepreneurial Big Five profile. In line with prospective reports on early precursors of entrepreneurship, the findings illuminate the development of entrepreneurship in general and entrepreneurial success in particular over the life span, especially with regard to factors relevant in the adolescent years and the interplay with personality across different developmental periods.

Keywords: Entrepreneurship, Entrepreneurial development, Entrepreneurial success, Personality, Competence growth in adolescence
Successful entrepreneurship as developmental outcome: A path model from a life span perspective of human development

Against the backdrop of occupational risks related to the current rapid social and economic changes (Silbereisen & Chen, 2010), both social scientists and policy makers emphasize the important role of entrepreneurship (e.g., business foundation) for future careers (Audretsch, 2007; European Commission, 2006). However, experts are debating how to predict and to foster a person’s successful entrepreneurship (Hisrich, Langan-Fox, & Grant, 2007; Shane, 2008). Why do some individuals become successful entrepreneurs, whereas others fail to achieve entrepreneurial success?

The traditional way in entrepreneurship research of answering this question is to look at dispositional personality traits. A wealth of studies suggest that traits such as need for achievement, extraversion, innovativeness, or risk-taking play a role in the explanation of a person’s entrepreneurial success (Rauch & Frese, 2007a). These studies usually focused on associations between traits and success measures. Personality traits, however, are probably not the direct cause of the linkage (Baum & Locke, 2004). Thus, it is still unclear how dispositional traits affect entrepreneurial success (Hisrich, Langan-Fox, & Grant, 2007).

To tackle this question, the present study draws from recent progress in personality psychology. In their meta-approach of personality, McAdams and Pals (2006) argued that an individual’s personality is composed of three intertwined levels: dispositional traits, characteristic adaptations, and integrative life narratives. In taking a life span developmental view into account, the authors consider personality to be expressed as a developing pattern of these three levels embedded in the historical and cultural context. For example, dispositional traits such as the Big Five (i.e., extraversion, consciousness, openness, agreeableness, and neuroticism) are seen to affect the social ecology of everyday life (e.g., role demands or developmental challenges) in part via characteristic adaptation (see also McCrae & Costa, 1999). Characteristic adaptations “reflect the enduring psychological core of the individual”
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(McCrae & Costa, 1999, p. 144) and comprise a wide range of “specific motivational, socio-cognitive, and developmental variables that are contextualized in time, situations, and social roles” (McAdams & Pals, 2006, p. 212). In contrast to dispositional traits, these adaptations are “activated in response to and ultimately shaped by the everyday demands of social life” (p. 209), and are thus more prone to change across the life span. Examples of a person’s characteristic adaptations are his or her skills (McCrae & Costa, 1999) and goals (McAdams & Pals, 2006). In adapting this view to the field of entrepreneurship, we argue that entrepreneurial competencies, skills, and goals can be understood as such contextualized characteristic adaptations. Studying these adaptations, in turn, should help to illuminate the path from entrepreneurial personality traits to the achievement of entrepreneurial success. Indeed, entrepreneurship studies could already show that personality traits affect success (e.g., venture growth) via entrepreneurs’ business competencies and business growth goals (Baum & Locke, 2004). However, past entrepreneurship research has neglected to study the connection between dispositional traits and characteristic adaptations as a developmental pattern over time, and under consideration of the social ecology and a person’s early developmental periods such as adolescence. Each entrepreneur should have a developmental history (Dyer, 1994; Zhang & Arvey, 2009) – a notion that is underlined by numerous longitudinal studies showing career outcomes to be rooted in childhood and adolescence (Clausen, 1991; Kokko & Pulkkinen, 2000; Schoon, 2001; Vaillant & Vailant, 1981).

Consequently, and drawing from McAdams and Pals (2006), this study examined the achievement of successful entrepreneurship by targeting the developing pattern of dispositional traits (entrepreneurial Big Five profile) and characteristic adaptations (age-appropriate entrepreneurial competencies, skills, and goals) across adolescence and adulthood. Our study also considered early developmental contexts that are deemed to be relevant for entrepreneurial development, namely role models and parenting in adolescence (McClelland, 1961). We developed and tested a path model utilizing data from German
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Business founders. In taking recent entrepreneurship research into account, our path model adopts ideas from two theoretical entrepreneurship models, namely from Schmitt-Rodermund’s (2004, 2007) developmental model and from Rauch & Frese’s (2007b) Giessen-Amsterdam model. Both models highlight characteristic adaptations through which personality traits affect entrepreneurship. The models will be explained in detail below.

Schmitt-Rodermund’s developmental model focuses on adolescence, thereby drawing from McClelland’s (1961) theoretical work on the developmental antecedents of entrepreneurship. Her model was validated by analyzing life span career data of the Terman boys, a sample that had been studied prospectively over a time span of more than 60 years.¹ Consistent with general life span models of human development (Baltes, Lindenberger, & Staudinger, 2006) and of vocational development (Super, 1980; Vondracek, Lerner, & Schulenberg, 1986), the model proposes that entrepreneurial activity can be understood as a developmental outcome (see also Obschonka, Silbereisen, & Schmitt-Rodermund, 2010).

More specifically, it states that engagement in entrepreneurial activity in the working life is predictable by early entrepreneurial competences in adolescence (e.g., early leadership or inventive activities). These characteristic adaptations, in turn, are seen to develop through interactions of the individual with a promotive environment that enables them to manifest their personality-typical behavior tendencies and to accumulate related experiences. Consistent with McAdams and Pals’ (2006) approach of personality, the model thus assumes early entrepreneurial competence in adolescence to be a function of an entrepreneurial Big Five profile and an early stimulating environment, i.e., entrepreneurial role models and authoritative parenting. The latter refers to those parents who are “warm and involved, but firm and consistent in establishing and enforcing guidelines, limits, and developmentally-appropriate expectations” (Steinberg, 2001, p. 7). Such a parenting style was found to support children’s self-confidence, autonomy, leadership, achievement orientation, self-efficacy, and an internal locus of control (for an overview of studies see Schmitt-Rodermund, 2004).
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While the developmental approach presented above represents a longitudinal view on the role of personality traits, Rauch and Frese’s (2007b) Giessen-Amsterdam model follows a cross-sectional approach targeting adults’ mindsets. Their model focuses on both broad traits (i.e., the Big Five) and specific traits (e.g., need for achievement, risk-taking, or locus of control) of entrepreneurs. These traits are expected to impact entrepreneurial success via task-related characteristic adaptations, namely entrepreneurial skills, knowledge, ability, and action strategies, and growth goals regarding business development. For example, the model states that entrepreneurs’ broad personality traits impact their entrepreneurial skills, which, in turn, affect their entrepreneurial success directly and indirectly via their entrepreneurial goals and action strategies. Furthermore, the effects of goals and action strategies on success are seen to be moderated by contextual conditions (task environment, organizational differences, and life cycle). Initial empirical support for the model comes from studies on the indirect effect of personality traits on entrepreneurial success via action strategies, skills, and growth goals (Baum & Locke, 2004; Frese et al., 2007; Rauch, Frese, & Sonnentag, 2000).

Hypotheses

An overview of our hypotheses is presented in Figure 1. Based on the Giessen-Amsterdam model and related findings (e.g., Baum & Locke, 2004), we expected the following. First, entrepreneurial skills and growth goals during venture creation should predict entrepreneurial success. Second, entrepreneurial skills should predict growth goals. Finally, an entrepreneurial Big Five profile should predict entrepreneurial skills. Regarding the conceptualization of an entrepreneurial trait profile, we applied Schmitt-Rodermund’s (2004, 2007) pattern-based definition. She presented evidence that a specific Big Five profile (i.e., high values in extraversion, conscientiousness, and openness, and low values in agreeableness and neuroticism) relates to a person’s entrepreneurial characteristics, activity, and success (see also Obschonka, Silbereisen, & Schmitt-Rodermund, 2010).

Longitudinal research suggests continuity regarding entrepreneurship-related
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competencies between adolescence and adulthood (e.g., in planful competence; Clausen, 1991). In addition, developmental psychology emphasizes the maintenance and elaboration of early personal characteristics over the life span due to cumulative continuity. According to Caspi, Elder, and Bem (1987), cumulative continuity describes a process where personal characteristics (e.g., early behaviors or competencies) “are sustained by the progressive accumulation of their own consequences” (p. 308). For example, individuals tend to select environments according to their personal characteristics. These environments, in turn, “fire back” at the person, in that they strengthen and deepen those personal characteristics that led to them in the first place (Kokko & Pulkkinen, 2000). Taken together, we expected early entrepreneurial competence in adolescence (indicated by leadership, inventive behavior, and commercial activities) to positively predict entrepreneurial skills during venture creation.

In this study, we assessed early entrepreneurial competence in adolescence by referring mainly to leisure time possibilities to exercise leadership, to reveal innovative capabilities, and to pursue economic exchange (all in an age-typical mode). Note that adolescent leisure time usually allows a large scope of autonomy in the choice of activities. According to the literature on adolescent competence, these choice processes in turn should be affected by both personal dispositions and stimulating environments (Csikszentmihalyi, Rathunde, & Whalen, 1993; Masten & Coatsworth, 1998). Studies indeed indicate that adolescents with an entrepreneurial Big Five constellation, characterized by high extraversion, conscientiousness, and openness, and low agreeableness and neuroticism, are more likely than others to search for opportunities and utilize their potential, which, in the short run, promotes the formation of early entrepreneurial competencies and, in the longer run, provides them with entrepreneurial skills during their working life (Schmitt-Rodermund, 2004, 2007). The same studies also showed a stimulating environment (role models, authoritative parents) to be important for the formation of early entrepreneurial competences, which is in line with McClelland’s (1961) reflections on early entrepreneurial development. In sum, we thus
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expected early entrepreneurial competence in adolescence to be predicted by an entrepreneurial Big Five profile, by early entrepreneurial role models (entrepreneurs among family and friends), and by authoritative parenting. The data used in this study stemmed from the *Thuringian Founder Study* (“Thüringer Gründer Studie”), which is a German collaborative research project conducted by economists and psychologists. Study 1, our main study, tests the full hypothesized model investigating established *founders* on the basis of mainly retrospective data from one measurement occasion (e.g., retrospective information regarding youth or venture creation). Study 1 is complemented by Study 2, employing a comparable design but investigating a sample of *nascent founders* (founders who are in the process of venture creation). Study 2 helps assess the validity of Study 1’s results by referring to the period of venture creation via current instead of retrospective data, thereby imposing a lower retrospective memory load.

**Study 1**

**Method**

**Sample**

The database drew from the public register for commercial and private companies and consisted of 2,971 innovative start-ups\(^3\) founded between 1994 and 2006 in the Federal State of Thuringia (Germany). From this list, we selected a random sample of 2,604 start-ups (and 3,671 corresponding founders). These founders were contacted via letter post and via telephone to recruit one founder per start-up. We also employed reminder letters. Several incentives were offered (e.g., a brochure including a personality test for founders, an overview of scientific books on entrepreneurship, and a list of public support initiatives). Finally, 639 founders were interviewed face-to-face in 2008, equivalent to a response rate of 24.5% (referring to number of start-ups). Members of the research project or trained student research assistants conducted these structured interviews, which took one and a half hours on average. The main reasons for drop-out were 1) we could not make any contact with the founder, 2) the
founder was not interested in participation, and 3) the phone call revealed that the foundation was not genuinely new (e.g., subsidiaries of existing companies). After excluding cases where the interview made clear that the start-up was not genuinely new or where we had concerns over interview quality, the final sample consisted of \( N = 531 \) founders. Note that participants who had founded more than one venture were surveyed concerning only one of their ventures. In the case of team foundings, we aimed to survey the main founder.

The average participant was 49.8 years old (\( SD = 9.99, \) min = 25, max = 75) and male (92.3%). Regarding origin, 89.2% grew up in East Germany (former German Democratic Republic) and 10.8% in West Germany. Two-thirds of the start-ups investigated (64.4%) were founded by a team. At the time of the interview, 21.7% of the start-ups had already closed. Regarding the technology sector of the new venture, 25.7% operated in information and communication technology, software, and picture processing; 25.1% in automation technology and mechanical engineering; 10.9% in (opto-)electronic, hardware, and measurement instrumentation; 9.2% in construction; 7.9% in environmental technology, energy management, and solar technology; 7.7% in process engineering; 5.7% in quality management, consulting, professional training, and marketing services; 3.2% in biotechnology, pharmaceutics, and chemistry; and 4.5% in miscellaneous sectors.

Measures

Table 1 provides an overview of all constructs used in this study as well of their indicator variables (presenting arithmetic means, standard deviations, Cronbach’s alphas, and sample items for each variable). Additional information on the variables is provided below.

Entrepreneurial Big Five profile. Using the German 45-item questionnaire by Ostendorf (1990), we assessed respondents’ Big Five traits, and then focused on the individual pattern of the traits (see also Obschonka, Silbereisen, & Schmitt-Rodermund, 2010). With regard to an entrepreneurial reference type, we estimated the “goodness-of-fit” of the individual Big Five profile. This reference type, i.e., highest possible value (5) in
extraversion, conscientiousness, and openness, and lowest possible value (0) in neuroticism and agreeableness, was based on previous research (for an overview see Schmitt-Rodermund, 2004). First, we estimated individual squared differences between the reference values (e.g., 0 for neuroticism) and the personal values (e.g., 3 for neuroticism) on each of the five scales. The five squared differences were then summed up. Finally, the algebraic sign of the sum was reversed and the resulting value served as the score for the variable entrepreneurial Big Five profile ($M = -21.48; SD = 5.70$). The closer the respective value was to zero, the better the fit between the person’s Big Five profile and the defined entrepreneurial reference type. Such a measurement procedure that focuses on the deviation between an empirical personality pattern and a prototypical pattern has been introduced, for example, by Block (1971, 2008).

We further collected a variety of retrospective data, employing an elaborate data collection procedure to facilitate the recall process. In detail, we adopted the Life History Calendar (LHC) method (see Caspi et al., 1996), which has already been successfully employed in life span studies (Laub & Sampson, 2003; see also Elder, 1994). With respect to the timing of retrospective life events, transitions, and sequences, the LHC was shown to measure such recalled information in a more valid and reliable way by utilizing specific retrieval techniques (Caspi et al., 1996). Regarding the use of the LHC in this study, the following procedure was conducted. At the beginning of the interview, each participant was asked to fill in the timing of major life events, transitions, and sequences (e.g., schooling, place of residence during adolescence, secular ‘Jugendweihe’ or Christian confirmation (ceremonies in which 14-year-olds receive an adult-like social status in Germany), higher education, working sequences, family life, entrepreneurial activities, and so forth). The completed LHC remained visible to the respondents during the entire interview so that these biographical key data served as memory anchors. Before each set of the retrospective survey items was stated (e.g., items on adolescence, the founding process, or the performance of the new venture), participants were asked to look at the respective point in time in the LHC to
contextualize and, thus, to better remember that time. The LHC and the interviewing strategy were planned according to the recommendations by Belli, Lee, Stafford, and Chou (2004).

**Authoritative parenting.** The participants were asked to describe their retrospective views on the parenting they had experienced in their families of origin when they were around 14 or 15 years old. Authoritative parenting was conceived as a parental strategy providing warmth, support of autonomy, and monitoring, and setting clear rules that the child is expected to follow (Steinberg, Mounts, Lamborn, & Dornbusch, 1991). *Autonomy support* targeted parental promotion of adolescents’ volitional functioning (Soenens, Vansteenkiste, Lens, Luycks, & Gossens, 2007). *Warmth* and *rules* were assessed according to Reitzle, Winkler-Metzke, and Steinhausen (2001) and *monitoring* (child disclosure) was measured following Stattin and Kerr (2000). In view of their retrospective nature, these four variables were then dichotomized (Kokko & Pulkkinen, 2000). We used median splits of the four variables to compute an additive index ranging from 0 to 4 ($M = 1.83; SD = 1.22$), with a value of 4 indicating above median answers in all four of the indicators (Schmitt-Rodermund, 2004, Steinberg et al., 1991). Kokko and Pulkkinen (2000) presented evidence from a prospective study for the validity of adults’ memories on parenting styles.

**Entrepreneurial role models.** Using two items, respondents were asked whether their parents, relatives, or close friends of the family were self-employed. Again, the key age to remember was 14–15 years old. In order to calculate the final variable, the first item (targeting a parent’s self-employed status [0 = no vs. 1 = yes]) was recoded into 0 = no and 2 = yes and then summed with the second item (targeting number of self-employed relatives and close friends of the family on a three-point scale; 0 = nobody, 1 = some, 2 = many). As a consequence, this variable ranged from 0 to 4 ($M = .80; SD = 1.17$). This coding procedure thus emphasizes the proximity of parents as role models and the importance of a portfolio of role models at the same time (Gibson, 2004).

**Early entrepreneurial competence in adolescence.** Three age-appropriate activities in
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youth (14–15 years old) were chosen to measure early entrepreneurial competence during adolescence: inventions, leadership, and early commercial activities (Schmitt-Rodermund, 2004, 2007). The variable inventions targeted respondents’ inventive behaviors during leisure time (e.g., constructing, painting, or building). Leadership was operationalized via a six-item checklist that asked for six types of leadership roles (e.g., captain in a sports team). Early commercial activities covered age-related selling activities during leisure time (e.g., trading things with friends).

Entrepreneurial skills. In order to retrospectively assess (perceived) entrepreneurial skills during venture creation, we used two established scales, namely new resource skills (Baum & Locke, 2004) and entrepreneurial competence (Chandler & Hanks, 1994).

Growth goals for the business. Self-developed bipolar goal-setting items reminiscent of previous entrepreneurship studies (Baum & Locke, 2004; Wiklund & Sheperd, 2003) and referring to revenue, profit, and market share were used to cover participants’ growth goals regarding the long-term development of the new firm. Respondents were asked to retrospectively report aspirations they had when the venture was founded.

Entrepreneurial success. There is no consistent definition of entrepreneurial success in the literature. Given that relations between independent variables and entrepreneurial success can depend upon the particular operationalization of success (Murphy, Trailer, & Hill, 1996; Rauch & Frese, 2007a), determinants of entrepreneurial success may be best studied considering a variety of success measures at the same time (see also Delmar, Davidsson, & Gartner, 2003). Thus, we considered multiple success outcomes, namely employment growth, profitability, and liquidity (credit rating) as well as founders’ satisfaction, each with regard to the first three business years of a newly-founded business. Note that the third business year of the new venture dated back 8.5 years on average at the time of the interview.

We used two data sources to measure entrepreneurial success. First, retrospective information given by the founders was considered. With regard to the third business year,
founders were asked to report the average number of regular employees (indicating employment growth; Delmar, Davidsson, & Gartner, 2003) as well as the perceived profitability of the new venture compared to competing companies. Subjective satisfaction was measured with an item that asked for founders’ satisfaction at the end of the third business year regarding the economic development of the new venture in the first three business years (van Gelderen, van der Sluis, & Jansen, 2005). Second, we utilized archival data. Credit ratings, provided by Germany’s leading rating agency ‘Creditreform’, were used to measure the liquidity of the new venture in the third business year. Such credit ratings provide valuable information on the financial status of a firm and thus on entrepreneurial success (Czarnitzki & Kraft, 2007). While the original rating index ranges from 100 (for the best rating) to 600 points (for the worst rating), Creditreform suggests converting this index into an eight-point scale (1 = best rating; 8 = worst rating). We followed this suggestion but finally reversed the new scores (1 = worst rating; 8 = best rating). Such credit ratings were, however, only available for 313 ventures as Creditreform does not routinely generate credit ratings for each start-up, but only when there is an external request from another company.

As our data set also included founders of closed ventures \((n = 115)\), we used this information to check the validity of our success measures. We found that business survival at the time of the interview (no/yes) correlated with three of our four success measures, namely profitability \((r = .17, p < .001)\), perceived satisfaction \((r = .30, p < .001)\), and credit-rating \((r = .24, p < .001)\). These results remained stable after controlling for year of foundation and thus support the validity of our success measures.

To consider macroeconomic conditions at the time of venture set-up, we controlled all effects on entrepreneurial success for the growth rate in gross domestic product (GDP) in the year of venture set-up (with reference to the preceding year).

**Results**

We employed structural equation modeling (SEM) using AMOS (Arbuckle, 2006). SEM
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makes it possible to consider latent variables that are corrected for measurement errors. Furthermore, SEM quantifies the goodness-of-fit between a hypothesized model and the data. Of the various fit indexes available, we decided to focus on $\chi^2$ and also on CFI and RMSEA (Kline, 2005).\(^5\) As noted above, we had to deal with a relatively large proportion of missing credit ratings in our data set (41.1% of the sample). We thus used the full information maximum likelihood method (e.g., Jamshidian & Bentler, 1999), which is implemented in AMOS (Arbuckle, 2006). This is the recommended strategy for testing SEM models with such missing data (no participants are excluded, no values are imputed).

Zero-order correlations between the variables used in Study 1 are shown in Table 2. Before we tested the hypothesized model, we performed a confirmatory factor analysis via AMOS to test the measurement model (Kline, 2005). This model only included the latent variables that were used in this study (early entrepreneurial competence, entrepreneurial skills, and growth goals; these variables are displayed as ellipses in Figure 2). The model fit the data well ($\chi^2 [17] = 21.84, p = .191, \text{CFI} = .991, \text{RMSEA} = .023$), supporting the assumed factorial structure of the latent constructs.

We subsequently tested the structural model (combined measurement and path model; see Figure 2). This model also achieved an acceptable fit ($\chi^2 [88] = 139.35, p < .001, \text{CFI} = .932, \text{RMSEA} = .033$). As illustrated in Figure 2, entrepreneurial skills during venture creation predicted growth goals and success, namely employment growth ($\beta = .17, p < .05$) and subjective satisfaction ($\beta = .19, p < .05$). Entrepreneurial skills, in turn, were predicted by an entrepreneurial Big Five profile ($\beta = .17, p < .01$) and by early entrepreneurial competence in adolescence ($\beta = .51, p < .001$). Finally, authoritative parenting ($\beta = .15, p < .01$), early role models ($\beta = .21, p < .001$), and an entrepreneurial Big Five profile ($\beta = .25, p < .001$) had an effect on early competence in adolescence. Taken together, all hypotheses were supported, apart from our expectation that growth goals would predict entrepreneurial success.

We conducted several follow-up analyses to explore reasons for the irrelevance of
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growth goals in our empirical model. First, we argued that ambitious goals may be particularly beneficial for success if these founders also possess the relevant means (e.g., skills) to achieve such goals. In a separate regression analysis, we thus tested interaction effects between founders’ entrepreneurial skills and growth goals in the prediction of entrepreneurial success (the four success variables). In addition, team founding (no/yes) and prior founding experience (no/yes) were also tested as moderators (Wiklund & Sheperd, 2003). No significant interaction effects were found. Furthermore, following Baum and Locke (2004), we also checked for a U-shaped relationship between goals and entrepreneurial success and could not find any evidence for a curvilinear relationship.

Discussion of Study 1

In sum, our hypothesized model was by and large supported and particularly applied to the prediction of employment growth and subjective satisfaction. One has to keep in mind, however, that the data utilized are retrospective and non-experimental, so that one has to avoid any premature interpretation in terms of cause and effect.

To our surprise we did not find associations between business growth goals and success, although previous studies found entrepreneurs’ growth aspirations to predict subsequent business success (Baum & Locke, 2004; Wiklund & Shepherd, 2003). Looking more closely, however, it can be seen that the earlier findings referred to preexisting and not to newly-founded ventures. Current growth aspirations of entrepreneurs running an existing business could forecast success because they are realistic due to their insights based on the venture’s past performance. In contrast, growth aspirations formed during venture creation could be less realistic and require adjustments throughout the first business years as a result of adaptation to the market conditions and the venture’s actual performance in the post start-up phase (cf., Sarasvathy, 2008). Seen in this vein, growth goals as assessed in this study probably referred to times too early in the process of founding to represent valid predictors of success. Another explanation could lie in possible moderator effects between goals and
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While we found no moderating effect of entrepreneurial skills, team founding, and prior founding experience (as indicated in footnote 10), other conditions not covered in our data set might play a role, for example, goal commitment (Locke & Latham, 2002) or contextual moderators such as task environment (Rauch & Frese, 2007b).

Study 2

**Method**

The question we aimed to answer in Study 2 was whether Study 1’s results regarding the prediction of retrospective reports on entrepreneurial skills and growth goals during venture creation are robust when considering not only traits but also these skills and goals as current data. This validation test was possible as we could study a sample of nascent founders with comparable characteristics as the founders investigated in Study 1 (e.g., regarding the focus on technology-oriented or knowledge-based enterprises, team foundings, or gender).

**Sample**

Applying Reynold’s (1997) definition of nascent founders, participants were recruited from two sources. First, individuals who were currently in the process of founding a technology-oriented or knowledge-based nascent project were recruited from suppliers of advisory services, business incubators, the chamber of commerce, business angels, and elevator pitches (events where entrepreneurs pitch their business ideas to venture capitalists or angel investors). Secondly, participants were recruited on the basis of a web-based survey of scientists, which was also part of the Thuringian Founder Study (Obschonka, Silbereisen, & Schmitt-Rodermund, 2010). Employed scientists from Thuringian research institutions were asked about their “nascent status” (no/yes), i.e., whether or not they were in the process of founding a new business. Individuals with current start-up activities (which mainly aimed at the commercialization of new research knowledge) were included in the sample. From May 2008 to March 2009, $N = 100$ nascent founders were surveyed. On average, these participants were 38.6 years old ($SD = 10.74$, min = 25, max = 64), and male (86.6%). Almost two-thirds
of the sample grew up in East Germany (63.0%) and 31.0% in West Germany. Concerning the current founding project, 66.0% founded the venture in a team. Regarding the technology sector of the new venture, 29.0% of the new ventures operated in information and communication technology, software, and picture processing; 20.0% in quality management, consulting, professional training, and marketing services; 12.0% in biotechnology, pharmaceutics, and chemistry; 11.0% in (opto-)electronic, hardware, and measurement instrumentation; 8.0% in environmental technology, energy management, and solar technology; 6.0% in automation technology and mechanical engineering; 3.0% in construction; 2% in process engineering; and 7.0% in miscellaneous sectors.

Measures

We applied the same data collection procedure as in Study 1 (face-to-face interviews, structured questionnaire, Life History Calendar). Again, as for Study 1, Table 1 illustrates detailed information on the study variables used in Study 2. The entrepreneurial Big Five profile ($M = -21.55$, $SD = 6.28$) and early entrepreneurial competence in adolescence were measured using the same measurements as in Study 1. The variables entrepreneurial skills and growth goals were assessed using the same items as in Study 1, but as current data. Entrepreneurial success could not be measured, as all respondents were still in the process of venture creation.

Results

Table 2 provides an overview of the bivariate relations between the variables. As in Study 1, we employed SEM. Again, the measurement model (only including the latent variables early entrepreneurial competence, entrepreneurial skills, and growth goals) achieved an acceptable fit ($\chi^2 [17] = 26.62$, $p = .064$, CFI = .924, RMSEA = .076). Figure 3 illustrates the structural SEM model, which also achieved an acceptable fit ($\chi^2 [24] = 38.30$, $p = .032$, CFI = .901, RMSEA = .078). As expected, nascent founders’ entrepreneurial skills predicted growth goals ($\beta = .60$, $p < .001$). Both an entrepreneurial Big Five profile ($\beta = .43$, $p < .01$) and early
entrepreneurial competence ($\beta = .44, p < .05$) predicted entrepreneurial skills as a founder. Finally, the effect of nascent founders’ entrepreneurial Big Five profile on their early entrepreneurial competence in adolescence was positive as in Study 1 ($\beta = .29, p = .071$), but did not achieve significance here (possibly due to the lower power of the analysis).

**Discussion of Study 2**

In Study 2, we investigated nascent founders – a group of entrepreneurial agents which are usually hard to recruit as they are not legally bound to report their emerging ventures to official registers. Taken together, Study 2 supports Study 1’s findings, indicating the validity of Study 1’s retrospective results regarding founders’ characteristics during venture creation.

**General discussion**

Combining arguments from personality psychology, developmental psychology, and entrepreneurship research, this paper investigated entrepreneurial success by testing a path model from a life span approach of human development. While such a developmental view has already taken its place in today’s political debate (European Commission, 2006; World Economic Forum, 2009), it has mostly been neglected in empirical entrepreneurship studies to date. We found a person’s entrepreneurial success to be associated with entrepreneurial skills that are present when starting their own business. These skills in turn appeared to be linked with both early developmental periods and dispositional personality traits.

Regarding early entrepreneurial development, we focused on early characteristic adaptations in adolescence (i.e., recalled early entrepreneurial competence, indicated by inventive activities, commercial activities, and leadership roles). Our results support the notion that age-appropriate early entrepreneurial competence forecasts entrepreneurial work competence in adulthood. Our findings are thus much in line with life span research on channeling processes in human development (e.g., cumulative continuity, Caspi, Elder, & Bem, 1987; Kokko & Pulkkinen, 2000) and on early precursors of work competence in adulthood (Masten, Desjardins, McCormick, Kuo, & Long, 2010). Interestingly, a link
between early entrepreneurial competence and entrepreneurial work competence in adulthood was found despite controlling for the effect of an entrepreneurial Big Five profile (measured in adulthood). This may hint at competence growth processes that are relatively independent of personality traits. Moreover, it is consistent with life span research showing adolescent competence to play a central role in the shaping of the life course (Clausen, 1991).

Regarding the path through which an entrepreneurial Big Five profile could be associated with entrepreneurial success, our study suggests the following. On the one hand, we found no direct link between an entrepreneurial Big Five profile and success, and thus there was no direct effect to be mediated. On the other hand, our results indicate a connection through entrepreneurial competence growth. Founders with higher overall similarity to the reference type of an entrepreneurial trait profile (high values in extraversion, conscientiousness, and openness, and low values in agreeableness and neuroticism) reported stronger entrepreneurial skills (indicated by new resource skills, for example, “I am good at finding money and people to start a new organization or new program” and entrepreneurial competence, for example, “I accurately perceive unmet customer needs”). In turn, higher levels of such skills related to better entrepreneurial success, a result that is in line with previous findings showing a loose coupling between personality traits and success (Schmitt-Rodermund, 2004). Moreover, founders’ entrepreneurial Big Five profile was found to be associated with their reports on early entrepreneurial competence in adolescence, which is in accord with past research in this field (Schmitt-Rodermund, 2004, 2007).

Regarding the social ecology that could shape characteristic adaptations in the context of entrepreneurship, our study focused on the presence of role models and authoritative parents. We found that parenting style and early role models had an effect on early entrepreneurial competence. The effect of parenting style was rather small, however. Nevertheless, this mirrors past findings from entrepreneurship studies (Schmitt-Rodermund, 2004, 2007), and one should keep in mind that most studies examining the link between
Successful entrepreneurship as developmental outcome

parenting style on the one hand and different kinds of child and adolescent behaviors and competencies on the other found small to moderate effects (e.g., DeHart, Pelham, & Tennen, 2006). Besides parenting styles, future research may also consider more specific parental behaviors (e.g., frequency of discussions about business or the disparaging of people who are dependent on an employer). Such studies could also consider methods other than traditional questionnaires, like observational methods or the daily diary method. Finally, future studies should go beyond assessing the mere presence of early role models. As suggested by Scherer, Adams, Carley, and Wiebe (1989), it may matter whether young people perceive their entrepreneurial role models as successful or not. Likewise, the type of role models’ activities, such as whether the role model is a family business leader (cf., Gibson, 2004), could matter. Taken together, what is needed is more elaborate research on early contextual effects. Such studies could, for example, pave the way for the development of empirically-informed early intervention programs aiming to stimulate (successful) entrepreneurship in more people. In this regard, our results suggest that successful entrepreneurial careers can be fostered early in life by targeting early entrepreneurial competence. Such early interventions may be particularly beneficial for individuals without early role models, authoritative parents, or an entrepreneurial trait profile that is contributive to competence growth (cf., Heckman, 2006).

Important caveats of this study have to be considered. The most serious limitation is the partially retrospective nature of the data. To ensure data quality, we utilized the Life History Calendar method (Caspi et al., 1996) and focused on adolescence – a developmental period that is in general well represented in the adult mind (Conway, Wang, Hanyu, & Haque, 2005). Note that our results are very similar to findings from a comparable prospective longitudinal study covering almost the complete lives of its participants (Schmitt-Rödermund, 2007). In addition, our retrospective results regarding adolescence are consistent with studies investigating early entrepreneurial development in adolescent samples using current data (e.g., Schmitt-Rödermund, 2004). One has to keep in mind, however, that we tested directed paths
from today’s personality traits to retrospective measures of competence. It is clear that these paths should not be confused with causal relationships as today’s trait structure cannot influence past individual characteristics. One might argue however that an entrepreneurial personality make-up could affect the way past entrepreneurial competence is recalled. In this regard, the literature suggests that adults’ recalling of such early biographical information leads to reliable and valid data independent of current traits (Brewin, Andrews, & Gotlib, 1993), particularly when one focuses on rather objective and factual retrospective information (Rutter, Maughan, Pickles, & Simonoff, 1998), as was the case in our study. Against the backdrop of a high stability of broad personality traits over time (Caspi, Roberts, & Shiner, 2005), it seems feasible to assume that the relationship between today’s Big Five profile and past competence reflects the expression of the individual personality structure.

To conclude, our results hint at the relevance of understanding a person’s entrepreneurial success as a developmental outcome. Development towards entrepreneurship in general and towards entrepreneurial success in particular appears to be intertwined with the individual trait profile, stimulating contexts, and characteristic adaptations across different developmental periods in the life span. To date, however, such a life span perspective is still missing on the agenda of entrepreneurship research (Hisrich, Langan-Fox, & Grant, 2007). We thus encourage more research in this field, preferably using longitudinal designs. According to McAdams and Pals (2006), future entrepreneurship studies could also consider integrative life narratives (integrative life narratives are individuals’ internalized and evolving life stories that help them to form a sense of personal identity, to bring continuity and meaning to their lives; see also Singer, 2004). For example, it would be interesting to examine business activities of entrepreneurs over their whole career (e.g., accumulated entrepreneurial success) by focusing not only on their traits and characteristic adaptations over time but also on their evolving narrative identity (e.g., whether they consider entrepreneurial thinking and acting as a crucial part of their self-concept).
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References


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personality traits across the life course: A meta-analysis of longitudinal studies.

*Psychological Bulletin, 132*(1), 1-25.


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parental autonomy support: Adolescent perceptions of promotion of independence versus promotion of volitional functioning. Developmental Psychology, 43, 633-646.


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Footnotes

1Launched in the 1920s, the Terman study prospectively followed gifted children and is today widely regarded as a landmark study in life span research.

2Innovative startups were defined according to the ZEW classification (Grupp & Legler, 2000). Such startups focus on advanced technology and technology-oriented services (e.g., production of optical or medical devices).

3Most respondents reported to have grown up in the former socialist part of Germany (German Democratic Republic). Nonetheless, self-employment was possible in this society, for example, among craftspeople.


5Note that relying solely on $\chi^2$ as a fit statistic is problematic. For example, $\chi^2$ is affected by the sample size and the size of the correlations in the model. Thus, experts suggest considering other fit statistics such as GFI and RMSEA when evaluating model fit. A rule of thumb is that a CFI value greater than .90 indicates a reasonably good fit. With respect to the RMSEA, values $\leq .05$ indicate a close approximate fit, and values between .05 and .08 suggest a reasonable error of approximation (Kline, 2005).

6By referring to a high stability in the Big Five traits, we do not assume that such traits do not change at all. This would neglect a growing body of research indicating that dispositional personality traits, besides their stability, also show plasticity across the life span (Baltes et al., 2006). For instance, Roberts, Walton, and Viechtbauer (2006) revealed “clear patterns of normative change” in the Big Five traits well into adulthood and old age (p. 18). However, as this change across the life span is on average rather small in magnitude, it seems safe to consider the Big Five structure as relatively stable between adolescence and adulthood (the two developmental periods relevant for our study).
**Successful entrepreneurship as developmental outcome**

**Table 1**

**Measurement of the Variables used in the Studies**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Variable</th>
<th>Answering scale</th>
<th>( N )</th>
<th>( M_{\text{study1}} )</th>
<th>( SD_{\text{study1}} )</th>
<th>( \alpha_{\text{study1}} )</th>
<th>( M_{\text{study2}} )</th>
<th>( SD_{\text{study2}} )</th>
<th>( \alpha_{\text{study2}} )</th>
<th>Sample item</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entrepreneurial</strong></td>
<td>1 Agreeableness</td>
<td>0=low;5=high</td>
<td>9</td>
<td>3.11</td>
<td>.57</td>
<td>.74</td>
<td>2.98</td>
<td>.53</td>
<td>.64</td>
<td>Good natured vs. cranky</td>
</tr>
<tr>
<td><strong>Big Five profile</strong></td>
<td>2 Conscientiousness</td>
<td>0=low;5=high</td>
<td>9</td>
<td>3.65</td>
<td>.59</td>
<td>.81</td>
<td>3.34</td>
<td>.68</td>
<td>.82</td>
<td>Lazy vs. diligent</td>
</tr>
<tr>
<td></td>
<td>3 Extraversion</td>
<td>0=low;5=high</td>
<td>9</td>
<td>3.21</td>
<td>.61</td>
<td>.69</td>
<td>2.97</td>
<td>.71</td>
<td>.77</td>
<td>Uncommunicative vs. talkative</td>
</tr>
<tr>
<td></td>
<td>4 Neuroticism</td>
<td>0=low;5=high</td>
<td>9</td>
<td>1.37</td>
<td>.51</td>
<td>.75</td>
<td>1.53</td>
<td>.57</td>
<td>.66</td>
<td>Vulnerable vs. robust</td>
</tr>
<tr>
<td></td>
<td>5 Openness</td>
<td>0=low;5=high</td>
<td>9</td>
<td>3.17</td>
<td>.56</td>
<td>.61</td>
<td>3.27</td>
<td>.60</td>
<td>.69</td>
<td>Conventional vs. inventive</td>
</tr>
<tr>
<td><strong>Authoritative parenting</strong></td>
<td>1 Autonomy granting</td>
<td>1=not correct;5=correct</td>
<td>4</td>
<td>4.13</td>
<td>.80</td>
<td>.86</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>My parents allow me to decide things for myself.</td>
</tr>
<tr>
<td></td>
<td>2 Rules</td>
<td>1=not correct;5=correct</td>
<td>4</td>
<td>3.60</td>
<td>.91</td>
<td>.75</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>My parents had clear rules concerning my behavior.</td>
</tr>
<tr>
<td></td>
<td>3 Warmth</td>
<td>1=not correct;5=correct</td>
<td>8</td>
<td>3.92</td>
<td>.85</td>
<td>.91</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>My parents supported me when I had a problem.</td>
</tr>
<tr>
<td></td>
<td>4 Monitoring</td>
<td>1=never;5=always</td>
<td>5</td>
<td>3.08</td>
<td>.83</td>
<td>.85</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Did you tell your parents about your best friends?</td>
</tr>
<tr>
<td><strong>Entrepreneurial role models</strong></td>
<td>1 Parents</td>
<td>0=no;1=yes</td>
<td>1</td>
<td>.19</td>
<td>.39</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Were your parents self-employed when you were 14 or 15 years old?</td>
</tr>
<tr>
<td></td>
<td>2 Relatives/close friends</td>
<td>0=none;2=many</td>
<td>1</td>
<td>.42</td>
<td>.57</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Where relatives or close friends of the family self-employed when you were 14 or 15 years old?</td>
</tr>
<tr>
<td><strong>Early entrepreneurial competence in adolescence</strong></td>
<td>1 Early leadership</td>
<td>0=no;1=yes</td>
<td>6</td>
<td>1.85</td>
<td>1.48</td>
<td>–</td>
<td>1.71</td>
<td>1.39</td>
<td>–</td>
<td>Did you have important responsibilities in your grade (e.g., class spokesperson)?</td>
</tr>
<tr>
<td></td>
<td>2 Early inventions</td>
<td>1=never;5=very often</td>
<td>14</td>
<td>2.50</td>
<td>.54</td>
<td>.68</td>
<td>2.44</td>
<td>.55</td>
<td>.64</td>
<td>How often did you construct new technical things?</td>
</tr>
<tr>
<td></td>
<td>3 Early commercial activities</td>
<td>1=never;5=very often</td>
<td>3</td>
<td>2.33</td>
<td>1.07</td>
<td>.78</td>
<td>2.35</td>
<td>.91</td>
<td>.60</td>
<td>How often did you sell things (e.g., to friends)?</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Entrepreneurial skills</th>
<th>1 New resource skills</th>
<th>I=not correct; 5=correct</th>
<th>6</th>
<th>3.78</th>
<th>.71</th>
<th>.70</th>
<th>3.75</th>
<th>.71</th>
<th>.77</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I am/was good at finding money and people to start a new organization or new program.</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>2 Entrepr. competence</td>
<td>I=not correct; 5=correct</td>
<td>6</td>
<td>3.67</td>
<td>.74</td>
<td>.70</td>
<td>3.78</td>
<td>.67</td>
<td>.70</td>
</tr>
<tr>
<td></td>
<td>I accurately perceive/perceived unmet consumer needs.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Growth goals</td>
<td>1 Revenue growth</td>
<td>I=low; 5=high</td>
<td>1</td>
<td>3.75</td>
<td>1.10</td>
<td>--</td>
<td>3.61</td>
<td>1.14</td>
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<tr>
<td></td>
<td>Constant revenue vs. permanently increasing revenue</td>
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<tr>
<td></td>
<td>2 Profit growth</td>
<td>I=low; 5=high</td>
<td>1</td>
<td>3.34</td>
<td>1.20</td>
<td>--</td>
<td>3.97</td>
<td>.91</td>
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<tr>
<td></td>
<td>Working entirely cost-covering vs. to realize much profit</td>
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<td></td>
<td>3 Market leader</td>
<td>I=low; 5=high</td>
<td>1</td>
<td>3.08</td>
<td>1.17</td>
<td>--</td>
<td>3.51</td>
<td>1.24</td>
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<tr>
<td></td>
<td>To be a small provider vs. to become market leader</td>
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<tr>
<td>Entrepreneurial success</td>
<td>1 Employment growth</td>
<td>I=not correct; 5=correct</td>
<td>1</td>
<td>6.82</td>
<td>11.45</td>
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<tr>
<td></td>
<td>Average no. of employees in the third business year</td>
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<tr>
<td></td>
<td>2 Perceived profitability</td>
<td>I=not correct; 5=correct</td>
<td>1</td>
<td>2.85</td>
<td>1.08</td>
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<tr>
<td></td>
<td>In the third business year, my venture was more profitable than ventures from competitors.</td>
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<tr>
<td></td>
<td>3 Subjective satisfaction</td>
<td>I=low; 5=high</td>
<td>1</td>
<td>3.43</td>
<td>1.15</td>
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<td></td>
<td>After the first three business years, how satisfied have you been with the economic development of the new venture?</td>
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<td></td>
<td>4 Credit-rating</td>
<td>I=very bad; 8=very good</td>
<td>--</td>
<td>4.98</td>
<td>1.08</td>
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<tr>
<td>Control variable</td>
<td>Growth rate GDP</td>
<td>--</td>
<td>2.80</td>
<td>1.38</td>
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</table>

*Note. N<sub>k</sub> = Number of items in the scale;<sup>study1</sup> refers to Study 1 (founders);<sup>study2</sup> refers to Study 2 (nascent founders); α = Cronbach’s alpha.*
Table 2

Correlations between the Variables (Study 1 and Study 2)

<table>
<thead>
<tr>
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<td>5</td>
<td>.12**</td>
<td>.11*</td>
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<td>6</td>
<td>.19***</td>
<td>.02</td>
<td>.13**</td>
<td>.11*</td>
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<td>9</td>
<td>.12**</td>
<td>.04</td>
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<td>.01</td>
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<td>.12**</td>
<td>.22***</td>
<td>.25***</td>
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</tbody>
</table>

Note: 
- *: p < 0.05
- **: p < 0.01
- ***: p < 0.001

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### Successful entrepreneurship as developmental outcome

<table>
<thead>
<tr>
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<tr>
<td>revenue</td>
<td>.12</td>
<td>.29**</td>
<td>.16</td>
<td>.10</td>
<td>.38***</td>
<td>.39***</td>
</tr>
<tr>
<td>10 Growth goals (High profit)</td>
<td>.05</td>
<td>-.01</td>
<td>.09</td>
<td>-.02</td>
<td>-.00</td>
<td>.08</td>
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<td></td>
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<td>.03</td>
<td>-.18</td>
<td>.02</td>
<td>.25*</td>
<td>.28**</td>
</tr>
<tr>
<td>11 Growth goals (Market leader)</td>
<td>.18***</td>
<td>-.02</td>
<td>.17**</td>
<td>.00</td>
<td>.08</td>
<td>.17***</td>
</tr>
<tr>
<td></td>
<td>.23*</td>
<td>.15</td>
<td>.04</td>
<td>.09</td>
<td>.25*</td>
<td>.35***</td>
</tr>
<tr>
<td>12 Entrepreneurial success: Employment growth</td>
<td>.02</td>
<td>.00</td>
<td>.08</td>
<td>-.02</td>
<td>.03</td>
<td>.09</td>
</tr>
<tr>
<td>13 Entrepreneurial success: Perceived profitability</td>
<td>-.02</td>
<td>.03</td>
<td>.04</td>
<td>.05</td>
<td>.07</td>
<td>.11*</td>
</tr>
<tr>
<td>14 Entrepreneurial success: Subj. satisfaction</td>
<td>-.03</td>
<td>.10*</td>
<td>-.03</td>
<td>-.08</td>
<td>-.01</td>
<td>.05</td>
</tr>
<tr>
<td>15 Entrepreneurial success: Credit rating</td>
<td>-.05</td>
<td>.04</td>
<td>-.14*</td>
<td>.04</td>
<td>-.04</td>
<td>.05</td>
</tr>
<tr>
<td>16 Growth rate GDP</td>
<td>-.05</td>
<td>-.02</td>
<td>.03</td>
<td>-.02</td>
<td>.04</td>
<td>.04</td>
</tr>
</tbody>
</table>

**Note.** Bold values refer to Study 1 (founders, N = 531); italic values refer to Study 2 (nascent founders, N = 100).

*p < .05. **p < .01. ***p < .001.
Figure Captions

*Figure 1.* Conceptual model.

*Figure 2.* Results of a model for the prediction of founders’ entrepreneurial success \((N = 531)\).

*Note.* Standardized coefficients are given. \(R^2\) is shown at the upper right corner of the variables. All effects on the four success variables were controlled for growth rate of gross domestic product. Correlations between the four success variables were allowed.

\(*p < .05. \**p < .01. \***p < .001.\)

*Figure 3.* Results of a model for the prediction of nascent founders’ growth goals \((N = 100)\).

*Note.* Standardized coefficients are given. \(R^2\) is shown at the upper right corner of the variables.

\(*p < .05. \***p < .001.\)
Successful entrepreneurship as developmental outcome

- Entrepreneurial role models
- Authoritative parenting
- Early entrepreneurial competence in adolescence
- Entrepreneurial Big Five profile
- Entrepreneurial skills
- Growth goals
- Entrepreneurial success

Part of Schmitt-Rodermund’s developmental model
Part of Rauch & Frese’s Giessen-Amsterdam model

Adolescence
Venture creation process
First 3 business years
Working Life
Measurement occasion
Study 2
Measurement occasion
Study 1

Entrepreneurial role models

Entrepreneurial skills

Growth goals

Entrepreneurial success

Early entrepreneurial competence in adolescence

Entrepreneurial Big Five profile

Entrepreneurial role models
Successful entrepreneurship as developmental outcome

Entrepreneurial role models → Early entrepreneurial competence in adolescence

Entrepreneurial Big Five profile

New resource skills → Entrepreneurial competence

Entrepreneurial skills

Growth goals

High revenue
High profit
Market leader

Credit rating

Subjective satisfaction

Profitability

Employment growth

Authoritative parenting

Early inventions
Early leadership
Early commercial activities

Entrepreneurial Big Five profile

Adolescence

Working Life

First 3 business years
Successful entrepreneurship as developmental outcome

Entrepreneurial Big Five profile

Early entrepreneurial competence in adolescence

Early leadership

Early commercial activities

New resource skills

Entrepreneurial competence

Entrepreneurial skills

Growth goals

High revenue

High profit

Market leader

Venture creation process

Adolescence

Working Life

Entrepreneurial Big Five profile

Early entrepreneurial competence in adolescence

Entrepreneurial skills

Growth goals

High revenue

High profit

Market leader

Venture creation process

Adolescence

Working Life