

TI 2011-061/3
Tinbergen Institute Discussion Paper



Entrepreneurship and Role Models

Niels Bosma^A

Jolanda Hessels^{B,C}

Veronique Schutjens^A

Mirjam van Praag^D

Ingrid Verheul^E

^A Utrecht University; ^B EIM Business and Policy Research, Zoetermeer; ^C Erasmus School of Economics, Rotterdam; ^D Faculty of Economics and Business, University of Amsterdam; ^E Rotterdam School of Economics; all in the Netherlands.

Tinbergen Institute is the graduate school and research institute in economics of Erasmus University Rotterdam, the University of Amsterdam and VU University Amsterdam.

More TI discussion papers can be downloaded at <http://www.tinbergen.nl>

Tinbergen Institute has two locations:

Tinbergen Institute Amsterdam
Gustav Mahlerplein 117
1082 MS Amsterdam
The Netherlands
Tel.: +31(0)20 525 1600

Tinbergen Institute Rotterdam
Burg. Oudlaan 50
3062 PA Rotterdam
The Netherlands
Tel.: +31(0)10 408 8900
Fax: +31(0)10 408 9031

Duisenberg school of finance is a collaboration of the Dutch financial sector and universities, with the ambition to support innovative research and offer top quality academic education in core areas of finance.

DSF research papers can be downloaded at: <http://www.dsf.nl/>

Duisenberg school of finance
Gustav Mahlerplein 117
1082 MS Amsterdam
The Netherlands
Tel.: +31(0)20 525 8579

ENTREPRENEURSHIP AND ROLE MODELS

Niels Bosma^A, Jolanda Hessels^{B, C}, Veronique Schutjens^A,
Mirjam van Praag^D, Ingrid Verheul^E

^A Faculty of Geosciences, Department of Economic Geography, Utrecht University, The Netherlands

^B EIM Business and Policy Research, The Netherlands

^C Erasmus School of Economics, Erasmus University Rotterdam, The Netherlands

^D Faculty of Economics and Business, University of Amsterdam, The Netherlands

^E Rotterdam School of Management, Erasmus University Rotterdam, The Netherlands

ABSTRACT

In the media role models are increasingly being acknowledged as an influential factor in explaining the reasons for the choice of occupation and career. Various conceptual studies have proposed links between role models and entrepreneurial intentions. However, empirical research aimed at establishing the importance of role models for (nascent) entrepreneurs is scarce. Knowledge of the presence of entrepreneurial role models, their specific functions and characteristics is therefore limited. Our explorative empirical study is a first step towards filling this gap. Our study is based on the outcomes of a questionnaire completed by a representative sample of 292 entrepreneurs in three major Dutch cities - entrepreneurs who have recently started up a business in the retail, hotel and restaurant sectors, business services and other services. We provide indications of the presence and importance of entrepreneurial role models, the function of these role models, the similarity between the entrepreneur and the role model, and the strength of their relationship.

KEYWORDS: role models, entrepreneurs, human capital, new firm start-ups

JEL-CODES: L26, M13, J24

VERSION: March 2011, accepted for publication in Journal of Economic Psychology

1. INTRODUCTION

Individual decisions to engage in a certain behavior are often influenced by the behavior and opinions of others, the demonstration of their identity and by the examples they provide (Ajzen, 1991; Akerlof and Kranton, 2000). This also holds for the occupational choice of individuals (Krumboltz et al., 1976) and, more specifically, the decision to engage in entrepreneurship. Many entrepreneurs claim that their business start-up decision and the development of their business have been influenced by others. These 'others' are often entrepreneurs and may range from famous people such as Steve Jobs to former colleagues or family members. Such persons serve as role models. A role model is a common reference to individuals who set examples to be emulated by others and who may stimulate or inspire other individuals to make certain (career) decisions and achieve certain goals (Shapiro et al., 1978; Basow and Howe, 1980; Wright et al., 1997). The relevance of role models for entrepreneurs is evident in the popular business press that is littered with stories of, and references to, entrepreneurial endeavors and successes that have influenced other entrepreneurs.

Although entrepreneurial role models have become a familiar phenomenon, their occurrence, function and characteristics have, as yet, been studied only to a limited extent by academics. In this paper we attempt to fill this gap by discussing the results of an empirical study that is explorative and descriptive in nature. It addresses the importance of specific role models for entrepreneurs. To this end we surveyed a representative sample of 292 entrepreneurs who recently started a business in the retail, hotel and restaurant sectors, business services and other services in three major Dutch cities: Amsterdam, Rotterdam and Utrecht.

Our study is inspired by the scarce and scattered literature on role models in entrepreneurship.¹ In addition to studies that establish role model effects on the entrepreneurial *intentions* of students (Krueger et al., 2000; Scherer et al. 1989; Van Auken et al., 2006a and 2006b), there are three strands of literature that may provide indications that role models are of importance in the decision to actually become an entrepreneur.

First, the stylized fact that the decision to become an entrepreneur i.e. to start up a business, is correlated positively with having parents who are or were entrepreneurs, is often interpreted as the effect of parental role models (Chlosta et al. 2010; Dunn and Holtz-Eakin, 2000; Fairlie and Robb, 2007; Hout and Rosen, 2000; Parker, 2009, p. 134-138). However, it is acknowledged that genetic heritage (Nicolaou et al. 2008), the actual possibilities for learning on the job provided by a family business (Fairlie and Robb, 2007), or financial support (Georgellis et al. 2005) may also underlie the observed association between the choice for entrepreneurship of parents and their children.

Second, it has been established that networks (Kim and Aldrich, 2005; Klyver et al. 2007) and peer groups (Djankov et al. 2006; Falck et al. 2010; Gianetti and Simonov, 2009; Koellinger et al. 2007; Nanda and Sorensen, 2009; Stuart and Ding, 2006) influence the decision to become an entrepreneur while it is assumed that networks and peer groups may provide role models.

The third strand of literature indicating that role models are associated with the decision to become an entrepreneur is obtained from a more aggregate perspective than that of the individual. Research at the regional level has shown that entrepreneurship is spread unevenly and that this regional variance in

¹ Gibson (2004, p. 135) explicitly acknowledges that only few empirical studies have analyzed the characteristics and functions of role models within the context of individual careers.

entrepreneurship is often persistent (Reynolds et al., 1994). Several studies have attributed these differences between clusters, regions and countries to the existence and availability of role models (Fornahl, 2003; Lafuente et al. 2007; Sternberg, 2009). Entrepreneurship can be seen as self-reinforcing (Minniti, 2005). In other words a region with high levels of entrepreneurship may further encourage new entrepreneurial initiatives because it is easier to find an appropriate example or obtain information or resources from other entrepreneurs. In addition, the presence of other entrepreneurs may legitimize entrepreneurial aspirations and actions (Davidsson and Wiklund, 1997; Mueller, 2006).

These strands of empirical studies merely *suggest* a link between the presence of role models and the decision to become an entrepreneur. They do not, however, directly establish relationships between role model presence and new firm start-up. Furthermore, empirical studies have not yet explored theoretical insights as to factors that may be associated with *who* has or is a role model or *how* (i.e. *in what functions*) role models may contribute to new venture creation. And also the nature of the *relationship* between the entrepreneur and his/her role model is, to a large extent, unknown. Role models may, for example, be icons with whom the entrepreneur is not familiar on a personal basis, models such as Richard Branson or Bill Gates. Alternatively, the relationship can be more personal, e.g. if the role model belongs to the entrepreneur's direct environment, such as family or friends to which there are strong ties or to the entrepreneur's wider environment, such as former employers or colleagues (weaker ties). Finally, the *match* between entrepreneurs and their role models has not yet been studied. Do entrepreneurs have homophilic role models, that is models who are similar to themselves in terms of characteristics such as nationality and gender, or do they select role models that are different and/or enterprising with a more ambitious scope and level (Kim and Aldrich, 2005; Ruef et al., 2003)? These questions are explored in this paper.

Analyzing the factors that may be associated with the individual's decision to become an entrepreneur is highly relevant given that new ventures are found to contribute to economic growth and innovation (Parker, 2009; Van Praag and Versloot, 2007). Accordingly, it is not surprising that the question 'what makes an entrepreneur', to quote Blanchflower and Oswald (1998), has been studied extensively and in many different theoretical settings. Individual determinants of entrepreneurship that have been widely studied include, among others, personality factors such as risk attitude (Caliendo et al., 2009), and the family background mentioned previously. Recent empirical studies tend to build on the Penrosian resource based view, establishing the link between human, financial and social capital on the one hand, and entrepreneurship on the other (Davidsson and Honig, 2003; Dunn and Holtz-Eakin, 2000, Parker and Van Praag, 2006; Van Praag et al., 2009). Entrepreneurial role models can be seen as a possible source of relevant human or social capital.

A better understanding of this potential driver of entrepreneurship may lead to the development and use of additional (policy) instruments to enhance entrepreneurial activity and outcomes. In fact, each year educational institutions and the media employ their scarce resources to provide students and audiences at large with entrepreneurial role models in the classroom, on television and in the press. Insight in the relationship between entrepreneurship and role models is important to discover whether resources invested in these programs are spent wisely or could be used more effectively.

Our paper contributes to the existing literature in four ways. First, we develop a theoretical perspective about the presence, functions and characteristics of role models for entrepreneurs. We do so by

applying theoretical knowledge about role models from other disciplines to the field of entrepreneurship. Second, and based on our empirical research, we describe the presence and importance of role models for starting up a business and compare the personal and firm characteristics of entrepreneurs with and without role models. Third, we empirically explore the likelihood of role model presence and the functions of role models for start-up entrepreneurs. Fourth, we describe the similarity in terms of gender, nationality, sector, human capital and firm performance between entrepreneurs and their role models and relate this to the concept of homophily.

The remainder of the paper is structured conventionally. In Section 2 we discuss the conceptual (and partly empirical) literature on role models in relationship with entrepreneurship. This discussion serves as the basis of our hypotheses. In Section 3 we discuss the data collection, the measurement of variables and we provide key results of the descriptive analyses. Section 4 discusses the analyses we apply to test our hypotheses. Section 5 concludes.

2. ENTREPRENEURIAL ROLE MODELS: THEORY AND HYPOTHESES

In what follows we first define role models and their various functions derived from role identification theory and social learning theory. The second part of the section is devoted to the formulation of hypotheses about: (A) Human capital characteristics of entrepreneurs that relate to the presence of role models (in any of their particular functions); (B) The resemblance between the entrepreneur and the role model in terms of human capital characteristics, demographics and sector; and (C) The relationship, proximity and contacts between the entrepreneur and the role model.

2.1 Definition and functions of role models

It has long been acknowledged that role models may have a profound influence on career decisions (e.g. Krumboltz et al., 1976). Therefore, role models may also enhance the desire to become an entrepreneur and the entrepreneurial self-efficacy of individuals (Van Auken et al., 2006a; 2006b). This may, in turn, positively influence entrepreneurial intentions and, ultimately, entrepreneurial activity (Krueger et al., 2000).²

As stated by Gibson (2004, p.136): “The term ‘role model’ draws on two prominent theoretical constructs: the concept of role and the tendency of individuals to identify with other people ... and the concept of modeling, the psychological matching of cognitive skills and patterns of behavior between a person and an observing individual”. This implies that individuals are attracted to role models who are perceived to be similar in terms of their characteristics, behavior or goals (the role aspect), and from whom they are able to learn certain abilities or skills (the model aspect).

Consistent with these role and model aspects, the phenomenon of role models can be explained by theories of (role) identification and social learning (Gibson, 2003; 2004). Role identification can be seen as a cognitive response to an individual’s belief that the characteristics of another person (the model) are close to his/her own motives and character (Kagan, 1958) and that this model plays a desirable -often central- social

² Role models may not only *promote* selecting a similar career (“positive” role model). They may also *prevent* people from choosing a similar career (“negative” role model) (Gibson, 2004). In the present study we focus on positive role models.

role or occupies an attractive position (Bell, 1970). Identification may result in the formation or adaptation of an individual's preferences (Witt, 1991) or in imitative behavior if this is expected to be rewarding (Kagan, 1958). It may provide someone with the motivation and inspiration to choose a particular direction, activity or career path (Krumboltz et al., 1976). In addition, role models provide living evidence that certain goals are achievable. The identification of, and comparison with, role models may help individuals *define their self-concept* or *sense of self* (Akerlof and Kranton, 2000) and enhance their self-efficacy to engage in a certain (e.g. entrepreneurial) occupation (De Clercq and Arenius, 2006; Gibson, 2004; Lockwood and Kunda, 1997).³ Thus, role models may enhance the desire to become an entrepreneur by providing legitimization and encouragement to turn entrepreneurial ambitions into reality (Arenius and De Clercq, 2005; Koellinger et al., 2007; Mueller, 2006).

Social learning theory or social cognitive theory (Bandura, 1977; 1986) argues that individuals are attracted to role models who can help them to further develop themselves by learning new tasks and skills (Gibson, 2004). People are assumed to learn in a social context through the observation of others with whom they can identify and who perform well in an area in which they, themselves, also wish to be involved or in which they want to excel, i.e. *learning by example* (or modeling). The role of positive entrepreneurial examples is important for enhancing entrepreneurial activity (Fornahl, 2003, p. 50).

In addition, role models may provide entrepreneurs with practical support and advice as a mentor to a mentee, i.e. *learning by support* (Nauta and Kokaly, 2001). In fact, many entrepreneurs find information on markets, industries, administrative regulations and potential pitfalls through their social network (Ozgen and Baron, 2007; Schutjens and Stam, 2003).⁴

Gibson (2004, p.149) summarizes the various functions that role models may fulfill and argues that the importance of role models lies in three interrelated functions: “to provide learning, to provide motivation and inspiration and to help individuals define their self-concept”. Assessing the influence of role models on students' academic and vocational decisions, Nauta and Kokaly (2001) add a support component, arguing that role models not only provide individuals with inspiration and modeling, but also with support and guidance.

Building on the theories of role identification and social learning as well as the proposed role model functions by Gibson (2004, p.149) and Nauta and Kokaly (2001, p. 95), we argue that entrepreneurial role models may perform four interrelated functions: (i), inspiration and motivation (i.e. the role model creates awareness and motivates people to get started), (ii) increasing self-efficacy (i.e. the role model makes people confident that they too can achieve a certain goal), (iii) learning by example (i.e. the role model provides guidelines for action), and (iv) learning by support (i.e. the role model provides hands-on support or advice). The first two functions result (indirectly) from role identification theory whereas the third and fourth are implied by social learning theory. These four possible functions of role models are distinguished in our empirical analysis to test the hypotheses formulated below.

³ Self-efficacy is considered an important driver of a person's motivation and ability to engage in a certain behavior (Ajzen, 1991), including entrepreneurship activities (Shane, 2003; Van Auken et al., 2006a; 2006b).

⁴ Even though role models that are important for this *learning by support* function are likely to originate from the entrepreneur's social network, it should be stressed that the social network is much broader as it also includes many non-entrepreneurs.

2.2 Entrepreneurs and their role models

(A) Human capital characteristics of entrepreneurs and role models

Two opposing views can be developed about the relation between human capital i.e. an individual's knowledge and competencies, obtained from (work and life) experience, and role model presence. The first view, that the likelihood of role model presence is higher for entrepreneurs with higher levels of human capital, is based on the notion of absorptive capacity (Cohen and Levinthal, 1990). The ability to value, interpret and apply (external) knowledge (i.e. role model influences) requires a certain level of knowledge and skills. In addition, more highly educated individuals may have more ambitious goals regarding their company, and may therefore be in greater need of successful examples or support. More highly educated people are also better able to benefit from information provided by role models.

The second view is that an entrepreneur's human capital can serve as a substitute for the support of a role model. Individuals with higher levels of human capital may be less likely to have entrepreneurial role models as a source of inspiration, learning and self-efficacy. Based on their knowledge and experience entrepreneurs with higher levels of human capital (believe they) have the ability to start their own business and make it successful (Gimeno et al., 1997; Hamilton, 2000; Hartog et al., 2010; Parker and Van Praag, 2006; Stuart and Abetti, 1990; Van Praag et al., 2009). General and entrepreneurship specific human capital can be substituted by role models e.g. to enhance the ability to solve problems during the start-up process; the awareness of lucrative business opportunities and self-confidence (Davidsson and Honig, 2003).

The difference between *general* and *entrepreneurship specific* human capital is closely linked with the aforementioned two opposing views. Absorptive capacity may be more strongly associated with general human capital obtained through formal education. Education enhances mainly 'codified' knowledge, which is easily documented, transferable and reproducible (Davidsson and Honig, 2003). In contrast, tacit knowledge, obtained through experience, cannot be documented easily and is often context-specific. It can best be transmitted via face-to-face interactions and frequent contacts (Davidsson and Honig, 2003). Thus, (close) role models may serve as a substitute for tacit knowledge (alternatively acquired through entrepreneurial experience) rather than codified knowledge. We formulate and test the following hypotheses:

- H1a:* The likelihood of role model presence is higher for entrepreneurs with higher levels of *general* human capital (acquired through formal education).
- H1b:* The likelihood of role model presence is lower for entrepreneurs with higher levels of *entrepreneurship specific* human capital (acquired through previous entrepreneurial experience).

In addition, entrepreneurship specific human capital is particularly likely to decrease the demand for role models as a source of inspiration or motivation and entrepreneurial self-efficacy. Entrepreneurs with *entrepreneurship specific* human capital will be less likely to have a role model for inspiration and motivation purposes because they already decided to pursue an entrepreneurial career. In addition, experienced entrepreneurs are expected to have a lower need for a role model to increase their entrepreneurial self-efficacy.

H1c: The likelihood of having a role model for inspiration/motivation or to enhance the entrepreneur's self-efficacy is lower for entrepreneurs with higher levels of *entrepreneurship specific* human capital (acquired through previous entrepreneurial experience).

We have no a priori expectations about how entrepreneurship specific human capital relates to the other role model functions (learning by support and learning by example).

(B) Similar versus dissimilar role models

Based on role identification theory and the role model function of increasing self-efficacy, some degree of similarity between the entrepreneur and the role model (at least in the perception of the entrepreneur) is to be expected, even if the role model occupies a (more) desirable position. Without such similarity it is difficult for the entrepreneur to perceive the behavior of the role model as compatible with the own (perceived) behavioral opportunities i.e. 'I can do anything (s)he can'.⁵ According to Slack (2005) role models may inspire potential entrepreneurs, especially when they show a high degree of resemblance. Empirical evidence, for example, suggests that individuals and their role models tend to be similar in terms of gender and race (Ruef et al. 2003; Hernandez, 1995; Maccoby and Jacklin, 1974). In general, homophily, that is the tendency of individuals to associate and bond with similar others, guides many relationships (McPherson et al., 2001). Evidence of gender homophily has been found in various contexts, such as large organizations (Kalleberg et al., 1996), networks (Ibarra, 1997) and voluntary organizations (McPherson and Smith-Lovin, 1987). In addition, ethnic homophily has been identified in the work place (Reskin, 1999). Within the context of entrepreneurship, homophily plays a role in entrepreneurial teams and networks (Parker, 2009; Ruef et al., 2003).

Based on social learning theory there should be opportunities to learn from a role model (through example or support) and this is more likely when the role model is more highly qualified than the role model 'user': i.e., there is potential learning in dissimilarity. A role model often has a higher hierarchical position (Kram and Isabella, 1985; Shapiro et al., 1978). Bandura and Walters (1963) argue that, to be imitated, a role model needs to be socially effective or successful.

The conclusion from role identification theory is that entrepreneurs are likely to have role models they can identify with, for example in terms of a relevant domain or personal characteristics, and who have reached a desirable position. Social learning theory proposes that role models have positions, skills and experience from which the entrepreneur can learn. This implies that the role model occupies a desirable position and/or that (s)he has better qualifications, for instance, in terms of human capital. Thus, with respect to characteristics such as gender, sector and nationality (where differences do not imply any hierarchy, ranking or achievement) we expect entrepreneurs and role models to be similar. Regarding human capital characteristics and firm performance, however, we expect role models to be 'ranked higher' and lead firms that operate at a more ambitious and on a larger scale than the entrepreneurs. Hypotheses 2a and 2b combine the implications from role identification and social learning theory.

⁵ Superstars provoke self-enhancement and inspiration when their success and excellence in a relevant domain seems attainable but self-deflation when it seems unattainable (Lockwood and Kunda, 1997).

- H2a:* The similarity between entrepreneurs and their role models in terms of gender, nationality and sector is larger than a random assignment of role models and entrepreneurs would generate.
- H2b:* Entrepreneurs are likely to have i) role models with higher (human capital) qualifications than they have themselves and ii) role models whose businesses operate more successfully and at a more ambitious scale than their own businesses.

(C) The relationship and contact between entrepreneurs and role models

When role models are selected from the entrepreneur's network (instead of distant icons) they may be 'strong ties' such as friends or family members or 'weak ties' such as acquaintances, distant relatives or (former) colleagues and superiors (Granovetter, 1973). Weak tie networks are likely to fulfill a different function for the entrepreneur than strong tie networks, because the first provide access to new information and knowledge which may help entrepreneurs to explore new horizons and eventually expand the business, and the second (strong ties) may be more useful in providing mental and practical support (mentoring). Hence, we expect a relationship between role model function and network tie strength. We hypothesize the following:

- H3:* Entrepreneurial role models who assume a mentoring function are more likely to originate from the network of strong ties than from the network of weak ties.

3. DATA

In this section we first discuss the data collection and then describe the statistics of our sample of entrepreneurs, their firms and the functions of their role models. Other descriptive statistics, relevant for testing the hypotheses, are discussed in Section 4.

3.1 Data Collection

Our empirical analyses are based on data collected using a questionnaire completed by a sample of 292 owners of Dutch young businesses. The sample was randomly drawn from a population of owner-managers of young firms (start-up year 2006-2008) in the cities of Amsterdam, Rotterdam and Utrecht (three major Dutch cities) and in the sectors retail, hotels and restaurants, business services and other services. We decided to limit the sample to these four sectors to ensure some homogeneity. At the same time, these four industries represent the majority of start-ups between 2006 and 2008: 68 percent in 2006 according to the Dutch Chamber of Commerce web statistics.⁶ The Dutch Chambers of Commerce provided us with contact details from the firm registry database based on the parameters given above.

In spring 2009 a letter was sent to all selected firms to inform the entrepreneurs of a forthcoming invitation to participate in a research project on early-stage entrepreneurial activity in their region and the

⁶ The distribution of firms over the selected cities and sectors is not necessarily representative due to a stratified sample selection approach.

influence of other entrepreneurs on their business start-up decision and business development. We attempted to avoid a prescribed (and possibly too narrow) interpretation of the term 'role model' by entrepreneurs in our sample by introducing the research theme to the respondents as follows: "Entrepreneurs have intense experiences in the phases just before and after the start-up of their business. It is a hectic and exciting period during which entrepreneurs have to think out and plan their activities in various domains. The start-up of a firm can be seen as an important milestone, but also attracting customers, (further) developing a network or setting strategic business targets in terms of prices, turnover, profit etc are essential if start-ups are to perform effectively. Policy makers and academics recently developed a genuine interest in the function that other entrepreneurs fulfil in the start-up stage and beyond. The University of Amsterdam, Utrecht University and the Rotterdam School of Management joined forces, supported by the Chamber of Commerce to analyze the start and development of firms that have recently started up in this region. We would greatly appreciate your participation in this research project".

Based on the literature we compiled a structured questionnaire. It included an extensive set of questions about the role models that influenced the entrepreneur's decision to start the company (pre-start-up phase) and the progress in years 1-3 of the firm's life cycle (post-start-up phase). The structure of the interview was such that the entrepreneurs were first asked whether 'one or more other (ex-)entrepreneurs influenced their decision to start up a business themselves'. With the purpose of distinguishing between role model influences in the pre- and post-start-up phase of the company, our questionnaire included the following two questions: "Did another entrepreneur or ex-entrepreneur influence your decision to become an entrepreneur before the start-up of your company?" (for the pre-start-up phase), and: "Did another entrepreneur or ex-entrepreneur influence you with respect to the further development of your company after the start of your company" (for the post-start-up phase). From those respondents that answered affirmatively information was collected about a range of characteristics of these 'other entrepreneurs' and their (perceived) function. The exact same procedure was followed for role models in the post-start-up phase of the firm. In addition, the questionnaire contained a section with background questions about the entrepreneur and his/her firm.

Students participating in the entrepreneurship courses at the universities in Amsterdam, Rotterdam and Utrecht in the Spring term of the academic year 2008-2009 carried out the data collection using the aforementioned questionnaire. Students made appointments for face-to-face interviews with three entrepreneurs of new firms (up to three years old). Each student was provided with a list of fifteen business addresses randomly drawn from the lists obtained from the Chambers of Commerce. The students were carefully instructed about the questionnaire and the data collection procedure. They interviewed the entrepreneurs at the location of the entrepreneurs' preference. The total interview lasted about 45 minutes on average. The data collection process was supervised and closely monitored by the researchers. The questionnaire consisted mainly of closed-form questions. Only one out of the few open-ended questions that were checked, coded and analyzed by the researchers was actually used for the analyses.⁷ Other open-ended questions were used to confirm the completeness and correctness of the closed-form questions.

⁷ This question concerns the relationship between the entrepreneur and the role model. The answers to this question could be coded in clear, distinct categories.

3.2 Measurement and key statistics

The analysis draws on two sets of individuals: entrepreneurs and role models. Part A of Table 1 shows the main characteristics of the database.

<< Table 1 here >>

Role model presence and importance

Out of the 292 entrepreneurs who were interviewed, 159 (54%) had a role model. This 54 percent was divided into a group of 20 percent with a role model in the pre-start-up phase only, 10 percent with a role model in the post-start-up phase only, and 24 percent with a role model in both phases. Thus, in total, the entrepreneurs had 229 role models ($159 + 0.24 \cdot 292$). However, because 42 of the entrepreneurs had the same role models in the two phases, the sample consists of 187 unique role models (see part A of Table 1).

We also assessed the importance of the role model, in whatever function, for the entrepreneur by eliciting scores on the statement: *'Without this entrepreneur, I would probably not have started my own company'* (*'Without this entrepreneur, I would probably not have continued operating my company'*). The applicability of this statement was evaluated by the respondents (for each of the stages in the life cycle of their firms in which they claimed to have a role model) using a five points Likert scale: '1' = 'fully disagree' and '5' = 'fully agree'. It appeared that 28% of the entrepreneurs with role models (fully) agreed that their role model had been of crucial importance for undertaking the venture (pre-start-up) or continuing it (post-start-up).

To find out to what extent our data collection method rendered a selective sample, in particular, whether there is selectivity based on actual firm creation and/or the presence of role models due to our introductory letter, we held some additional telephone interviews with early-stage entrepreneurs (nascent and owner-managers in new firms) identified at the end of 2007 from the Global Entrepreneurship Monitor in the Netherlands, focusing on the (only overlapping) city of Amsterdam. Sixteen telephone interviews took place between December 2009 and January 2010 focusing on role models in the pre-start-up phase. The additional interviews were held without any introductory note or letter and the results can therefore not be biased due to selectivity 'on the dependent'. In this additional sample, 50 percent of the entrepreneurs had role models in the pre-start-up phase compared to 45 percent in the main sample when limited to the Amsterdam area. In the additional sample, 25 percent considered their role model of crucial importance for the start-up of their firm in the other sample, whereas the comparable percentage among Amsterdam entrepreneurs in the main sample was 32 percent. These comparisons provide support for the representativeness of our sample for the cities studied.

Entrepreneur characteristics

Part B of Table 1 shows the descriptive statistics of the demographic and human capital characteristics of the entrepreneurs in our sample. The gender, age and education distributions are representative for the population of starting business owners in the Netherlands in this time period, based on

comparisons with a Dutch start-up panel (1998-2008) and Global Entrepreneurship Monitor (GEM) data (2002-2008) (EIM, 2009). Almost forty percent of the sample is female, the average entrepreneur to recently start a firm is 38 years old and 54 percent has a college or university degree. Our sample is not representative in terms of the nationality of the entrepreneurs. Over 80% of our sample was born in the Netherlands, whereas the estimated percentage of entrepreneurs in these three large cities who are Dutch was only 68 percent in 2004 (EIM, 2007). The higher percentage of Dutch entrepreneurs in our sample was probably due to the fact that the introductory letter and questionnaires were in Dutch. Finally, a quarter of our sample had previous entrepreneurship experience, 15% for more than five years. Table 2 shows the correlations of the variables entering our regressions and measuring the key characteristics of the entrepreneurs.⁸

The right hand side of Table 1 compares entrepreneurs with role models (column II) to entrepreneurs without role models (column III). Entrepreneurs with role models are significantly younger than entrepreneurs without role models. Moreover, entrepreneurs with role models have significantly higher levels of education and less experience in entrepreneurship than the ones without role models.⁹ Columns IV to VI show the distributions of the key entrepreneur statistics for the subgroups with role models in the start-up phase, after the start-up phase and with role models in both phases. There are only a few differences between the average values in columns VI to IV. Based on a Pearson Chi Square test it was established that the education distribution is distinct for the three groups: those who have role models exclusively in the post-start-up phase are, on average, more highly educated than those who have role models in both phases or only in the pre-start-up phase.

Part C of Table 1 describes the firm characteristics. A quarter of the interviewed firms are located in Amsterdam whereas the rest is distributed equally over the cities of Rotterdam and Utrecht. As stated previously this distribution is not representative due to stratification. The same holds for the distribution of sampled firms over sectors. One third of the firms are active in the business service sector, 15 percent in the hotel and restaurant sector and the remaining half is distributed equally across the retail and 'other services' sectors. Table 1 further shows that half of these recent start-ups are run from home and that nearly one third of the sample co-owns a firm together with one or more partners.

<< Table 2 here >>

Role model functions

As we discussed in the previous section, we distinguish between four role model functions. We evaluate the importance of each of these functions for the entrepreneurs with role models in the various stages of their

⁸ Age and age squared are both included in the regression equations to allow the relationship between the left hand side variable and age to be non-linear, as is usual in the labor economics tradition. The correlation coefficient between age and aged squared is high by construction and the resulting coefficients should always be interpreted in conjunction. The same applies to the two variables indicating entrepreneurial experience as they are also positively correlated. We checked for potential multi-collinearity problems and assessed the results of our models when age squared was removed. It turned out that the other coefficients remain unaffected. We included age squared consistently throughout the equations.

⁹ The table also shows that entrepreneurs with role models are less likely to be active in the retail sector and more likely to be active in the business services sector. This strengthens our idea of focusing on a specific set of sectors that represents, nevertheless, 68 percent of the business start-ups in the Netherlands in 2006 (and this has led us to include sector controls in all regressions).

firm based on four statements (See Table 3). Again, the applicability of each of the statements is evaluated by the respondents (for each of the stages in the life cycle of their firms in which they claimed to use a role model) using a five points Likert scale: '1' = 'fully disagree' and '5' = 'fully agree'. Table 3 shows the results and depicts the percentage of role models that scored 4 or 5 ((fully) agreed with the statements.

<< Table 3 here >>

The four identified functions of role models are all highly valued both before and after the start-up of the entrepreneurs' companies. Column II that pertains to all entrepreneurs in the sample with a role model reveals that entrepreneurs view learning by example as the most important function of their role models. Increasing self-efficacy turns out to be their least valued function in both stages. However, limiting the selection to role models who are perceived to be of crucial importance to the start-up (33%) or performance (21%) of their firm (column I), this picture alters. While learning by example remains the dominant function of role models, the inspiration and motivation function is assessed to be significantly more important than average. The last two columns show that role models perform about the same functions before and after start-up, with the exception of learning by support, which is significantly more appropriate in the post start-up phase.

We used the answers to the open questions (that precedes the statements in the course of the questionnaire) '*In which way did this entrepreneur influenced your decision to start your company?*' with regard to the pre-start-up phase and '*In which way did this entrepreneur influence your company's development?*' pertaining to post-start-up to verify whether our statements indeed captured the most important functions. They proved to do so, since 'providing confidence', 'stimulate', 'motivate', 'practical advice' and 'example' where the influences that were mentioned spontaneously most frequently.

To conclude, role models seem wide spread: 54 percent of the entrepreneurs had a role model in either phase of the firm life stage (while these firms are all younger than four years). Of these entrepreneurs, almost half have a role model in both the start-up phase and afterwards (often the same person). Moreover, many entrepreneurs thought that their role models fulfilled important functions and a significant part of them even claimed that they would not have started (or continued) their business without their role model. The dominant function of the role model is 'learning by example'. The next section is devoted to testing the hypotheses.

4. RESULTS

4.1 Human capital and the use of role models

To test Hypotheses 1a and 1b, we assessed to what extent the human capital characteristics of entrepreneurs relate to the presence of entrepreneurial role models. The results of the probit model are presented in Table 4. The first two columns analyze the presence of role models in either the pre-or post-start-up phase, whereas the third column reports the results of analyzing factors associated with having a role model who is of ‘crucial importance’. The results reported in the first column were obtained without including controls in the regressions, whereas the results in the second and third column were obtained while including controls.

<< Table 4 here >>

The results in Table 4 show that human capital matters for having a role model. As expected, entrepreneurs with higher levels of education are more likely to have a role model than their less highly educated counterparts. This is in line with the absorptive capacity perspective, stating that human capital enhances the use of a role model, as highly educated entrepreneurs have the intrinsic capacity to benefit from (external) information, inspiration, support or advice (Cohen and Levinthal, 1990). Hypothesis 1a stating that ‘The likelihood of role model presence is higher for entrepreneurs with higher levels of *general* human capital (acquired through formal education)’ is not rejected.

Furthermore, we find that the relationship between entrepreneurship specific human capital and role model presence is consistent with Hypothesis 1b. The likelihood of role model presence is lower for entrepreneurs with higher levels of *entrepreneurship specific* human capital (acquired through previous entrepreneurial experience). However, entrepreneurial experience does not decrease the likelihood of having a role model that is of crucial importance for the start or development of their (new) firm. Hypothesis 1b is not rejected.

To test Hypothesis 1c we investigated whether the effect of entrepreneurship specific experience lowers the need for role models with particular functions (motivation and increasing entrepreneurial self-efficacy). Table 5 shows the results of the human capital variables in the probit regression explaining the (perceived) function fulfilled by the role model.¹⁰ General and entrepreneurship specific human capital appear to have little explanatory power for the particular functions that entrepreneurs assign to their role models. Hypothesis 1c is not supported.

¹⁰ We tested whether the analysis required a framework of a two stage Heckman probit model in which the first stage decision is having a role model and the acknowledged functions of the role model are seen as a second stage decision. Leaving out the first stage of the model may render biased estimates of the second stage of the model in case the two decisions are correlated. Upon estimating a two stage model, we find an insignificant correlation coefficient (with p-values between 0.44 and 0.93) in this application. Variables used as identifying variables for the first stage regression are sector dummies, size of the firm at start-up (in FTEs) and a dummy variable indicating team start-ups versus solo start-ups. In further tables, we will refrain from including a first stage.

In addition to the effects discussed that are relevant to the hypotheses, few of the coefficients of the variables in the model are significant ($p < 0.05$). Apparently, human capital is a relatively important observable factor associated with role model presence.

<< Table 5 here >>

4.2 Resemblance of entrepreneur and role model

To test Hypothesis 2a, and answer the question to what extent entrepreneurs have homophilic preferences for role models in line with role identification theory, we analyzed the differences between entrepreneurs and their role models in terms of gender, nationality and sector.

<< Table 6 here >>

Table 6 shows that 68 percent of the entrepreneur-role model combinations in the pre-start-up and post-start-up phase is of the same gender. If role models were drawn randomly with respect to gender, and given that 40% of the entrepreneurs (with a role model) in the sample is female and that the percentage of female entrepreneurs in the Netherlands was 40% in 2007 (EIM, 2009), one would expect a much lower percentage of $0.6 \cdot 0.6 + 0.4 \cdot 0.4 = 52\%$ of gender-similar matches. The difference in actual and random proportions (68 versus 52) is statistically significant ($p < 0.01$), indicating that entrepreneurs tend to have role models of the same gender.

In addition, 80% of the entrepreneurs have role models with the same nationality. This percentage is 85% for Dutch entrepreneurs. Given that approximately 68% of the entrepreneurs in the big cities is Dutch (EIM, 2007), the percentage is above the expected number when drawn randomly. Thus, entrepreneurs seem to have role models that are similar in terms of their nationality (proportions are significantly different, $p < 0.01$).

Table 6 shows also that 40% of the entrepreneurs with role models operate in the same sector as their role models. This high percentage also suggests that entrepreneurs and role models are operating in the same sector with a higher probability than a random draw would generate.

We tested Hypothesis 2b based on the results in Table 7. Here we established the (dis)similarity between entrepreneurs and their role models by means of paired t-tests on the dimensions of human capital and firm performance. The results show that role models indeed have higher levels of human capital than the entrepreneurs: the role models are significantly older. However, entrepreneurs and their role models have similar levels of education. The firms of the role models differ from those of the entrepreneurs themselves in only one respect: they are significantly larger (22 versus 3.5 FTE). Contrary to the expectation expressed by Hypothesis 2b, they are not more innovative nor do they serve more international or less local clients.

<< Table 7 here >>

In line with Hypothesis 2a, we found that entrepreneurs and their role models resemble each other in terms of characteristics that facilitate role identification: gender, sector and nationality. In support of Hypothesis 2b on the similarity between role models and entrepreneurs in terms of their human capital characteristics and firm performance, we find that role models are older (more experienced) and have larger firms than the entrepreneurs, leading to the conclusion that they will probably occupy a (more) desirable position (required for role identification) and that they have the necessary qualifications (required for their teaching function, either by example or support).

4.4 The relationship between the entrepreneur and the role model

According to the literature, ‘weak ties’ and ‘strong ties’ perform distinct functions in the decision to start up a business. About 40% of the role models mentioned by entrepreneurs in our sample can be characterized as strong ties: 22% is a relative (parent or other family), and 19% of all role models originates from a group of friends. Interestingly, only 25% of all role models mentioned by entrepreneurs with entrepreneurial parents comes from within the family. In many cases role models are former employers or former colleagues. This is the case for almost one-third of all role models. The remaining role models form a miscellaneous group, consisting of former fellow student, professional contacts and people from personal networks. It is remarkable that almost none of the entrepreneurs (only two of them) mention that they consider an ‘icon’, i.e. a distant and famous (inter)national entrepreneur, as their role model. Hence, we should not overestimate the importance of distant entrepreneurial examples. Rather, it appears that role models are found close to home. This is also supported by the fact that 84% of the entrepreneurs with role models in our sample have (or had) personal contact with their role models. More than half of all role models with whom entrepreneurs stay in touch personally is (or was) contacted on a weekly basis.

Hypothesis 3 relates the mentoring function of the role model to the strength of ties. Columns I and II in Table 8 show the results of the probit regression explaining whether the role model can be considered to belong to strong ties or weak ties, respectively.

<< Table 8 here >>

Consistent with Hypothesis 3 the data showed that role models with a mentoring function are more likely to be family members (i.e., strong ties) and are less likely to be colleagues or former employers. It is remarkable that family members and friends, both in the category ‘strong ties’, fulfil different functions.

We conclude that entrepreneurs only seldom recognize ‘icons’ as their role models. It is much more common that an entrepreneurs role model is someone (s)he knows personally (84%) and with whom (s)he frequently interacts. Two out of five entrepreneurial role models stem from ‘strong ties’, covering both family members and friends. Another common source of role models is former colleagues and employers (Nanda and Sorensen, 2009). We find supportive evidence for the hypothesis that role models with a mentoring

function are often sourced from 'strong tie' relationships, in particular from the family members of the entrepreneur.

5. Conclusions

Given that role models are increasingly seen as important for determining career choice and outcomes, educational institutes around the globe more and more involve 'icon' entrepreneurs in their educational programs to motivate, inspire and support entrepreneurship among pupils and students. However, the efficiency and effectiveness of spending means and (student) time on role models in the classroom have received much less attention. In general researchers have, as yet, paid limited attention to studying entrepreneurship and role models. Apart from conceptual studies establishing a link between role models and entrepreneurial intentions, empirical research on the importance of role models for (nascent) entrepreneurs has been scarce and there is still little knowledge of what determines the use of specific entrepreneurial role models, as well as the precise function of such role models.

Our explorative empirical study based on a representative sample of 292 entrepreneurs in the Netherlands can be seen as a first step to fill this research gap. We provide preliminary evidence of the presence of role models before and shortly after firm start-up, the function of these role models and the relationship and similarity of characteristics between the entrepreneur and his/her role model. As such, this study is a first attempt to unravel the meaning and importance of role models for entrepreneurs.

A first conclusion is that - relying on the opinions of the entrepreneurs themselves - role models matter for pursuing an entrepreneurial career. The use of entrepreneurial role models appears wide spread: 54 percent of the entrepreneurs have a role model in the pre- and/or post-start-up phase. Of these entrepreneurs, 81% has a role model before starting up their venture and 63% has a role model within the first three years of the business' operations. Almost half of these entrepreneurs have a role model both pre-and post-start-up, with the majority leaning on the same role model in these two different stages. All these percentages are even higher for first ventures: 27% of our sample consists of experienced entrepreneurs who are less inclined to use role models. This information confirms the potential of role models to serve as a self-reinforcing mechanism when entrepreneurship is gaining popularity in a country or region.

Second, role models are viewed as influential persons by a significant proportion of the entrepreneurs who use them in the start-up phase of their venture. One third of the entrepreneurs with a role model at the time of start-up claim they would not have started up their venture without this role model. One fifth of the entrepreneurs claim they would not have continued their business without the role model they have post-start-up. These findings suggest that role models play an important role for entrepreneurs in (young) firms.

The dominant function of a role model is 'learning by example', although 'learning by support', 'increasing entrepreneurial self-efficacy' and 'inspiration/motivation' are also important (perceived) functions of role models. This is consistent with both the social learning and role identification theory. Thus, to promote entrepreneurship as a career choice it is important to bring together potentially aspiring and inspiring entrepreneurs who know each other. The fact that actual support by role models is important for entrepreneurs in the post-start-up phase and is usually provided by family members has been overlooked so

far. This may have policy implications since family members may provide an efficient alternative to expensive channels of entrepreneurial support facilitated by (local) governments.

Third, few characteristics of entrepreneurs and their firms determine the use of role models. Human capital forms an exception. Our results are consistent with the hypothesis that role models compensate for a lack of entrepreneurial experience. Individuals who have no previous entrepreneurial experience are indeed more likely to have a role model than those who have previous start-up experience. However, the probability that these *de novo* entrepreneurs claim that their role model was of crucial importance is not higher than for experienced entrepreneurs.

Moreover, entrepreneurs with higher levels of education are more likely to have a role model and the likelihood that these entrepreneurs view their role models as crucially important is significantly higher. This may be explained by their higher absorptive capacity (Cohen and Levinthal, 1990), stating that in order to value, interpret and apply (external) knowledge, i.e. role model influences, economic actors should themselves have a certain level of specific knowledge and experience.

Fourth, we provide preliminary evidence that entrepreneurs and their role models tend to resemble each other in terms of the characteristics that facilitate role identification, i.e. gender, sector and nationality. In terms of human capital characteristics and firm performance, role models are older (more experienced) and have much larger firms than the entrepreneurs in our sample. These resemblances and differences between entrepreneurs and their role models apply irrespective of the function of the role model and the phase of the business of the entrepreneur.

Fifth, while individuals are extensively and increasingly exposed to entrepreneurial role models through the media, these 'icons' are seldom considered role models for entrepreneurs in our sample. This suggests that entrepreneurial role models tend to be next-door examples rather than more remote 'icons'. Most often, entrepreneurs know the entrepreneurs who influenced them personally, through networks in personal or professional spheres, where 'weak ties' dominate 'strong ties'. A common source of role models is former colleagues and employers (see also Nanda and Sorensen, 2009). Role models with a mentoring function are often sourced from 'strong tie' relationships.

Our exploratory analysis of entrepreneurship and role models is prone to a number of limitations, which, at the same time provide indications for possible avenues of future research. Because our sample includes only active entrepreneurs, it was not possible to gain insight into the extent to which role models influence individuals to abstain from entrepreneurship as a career choice (i.e. negative role models). Our analysis is limited to a (selective) sample of 'pre start-up' observations, i.e. those individuals who have succeeded in becoming entrepreneurs. Including questionnaire items on role models in panel studies following nascent entrepreneurs over time is a way of circumventing this selection problem. In addition, we used a rather static design by concentrating on the most important role model only. In practice, entrepreneurs may be influenced by various role models at the same time. Finally, our study does not address whether and how role models relate to the subsequent success of the firm of the role model users. We acknowledge that our study is descriptive in nature and the associations we find cannot be interpreted as causal effects. Future research could fill these gaps by concentrating on the effect of entrepreneurial role models on venture performance.

Acknowledgements: The authors wish to thank all the students who assisted with the data collection. We are also grateful to Daan Dessing, Sijf van Hoof, Wendy Mos, Kim de Rotte and Sjoerd Vijfvinkel for their excellent research assistance. The authors would also like to thank three anonymous referees and the guest editors of this special issue for their valuable comments and suggestions. This paper has also benefited from useful comments and suggestions from seminar and conference participants at the Rotterdam School of Management and Erasmus School of Economics and the RENT conference, 2009. The paper has been financed partly by the research program SCALES carried out by EIM Business and Policy Research and financed by the Dutch Ministry of Economic Affairs, Agriculture & Innovation. The usual disclaimer applies.

REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Akerlof, G.A. and Kranton, R.E. (2000), Economics and identity. *The Quarterly Journal of Economics*, 115(3), 715-753.
- Arenius, P. and De Clercq, D. (2005). A network-based approach on opportunity recognition. *Small Business Economics*, 24, 249-265.
- Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1986). *Social Foundations of Thought and Action*, New York: Englewood Cliffs.
- Bandura, A. and Walters, R. (1963). *Social learning and personality development*. New York: Holt, Rinehart, & Winston.
- Basow, S and Howe, K. (1980). Role-model influence: Effects of sex and sex-role attitude in college students. *Psychology of Women Quarterly* 4, 558-572.
- Bell, A. (1970). Role modelship and interaction in adolescence and young adulthood. *Developmental Psychology* 2(1), 123-128.
- Blanchflower, D. and Oswald, A. (1998). What makes an entrepreneur? *Journal of Labor Economics*, 16, 26-60.
- Caliendo, M., Fossen, F. and Kritikos, A. (2009). Risk attitudes of nascent entrepreneurs – new evidence from an experimentally validated survey. *Small Business Economics* 32(2), 153-167.
- Chlosta, S., Patzelt, H., Klein, S.B. and Dormann, C. (2010), Parental role models and the decision to become self-employed: The moderating effect of personality. *Small Business Economics*, published online 6 March 2010. DOI: 10.1007/s11187-010-9270-y
- Cohen, W.M., Levinthal, D.A. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152
- Davidsson, P. and Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing* 18(3), 301-331.
- Davidsson, P. and Wiklund, J. (1997), Values, beliefs and regional variations in new firm formation rates. *Journal of Economic Psychology* 18, 179-199.
- De Clercq, D., and Arenius, P. (2006). The role of knowledge in business start-up activity. *International Small Business Journal* 24(4), 339-358.
- Djankov, S., Qian, Y., Roland, G. and Zhuravskaya, E. (2006). Entrepreneurship in China and Russia compared. *Journal of the European Economic Association* 3, p. 587-597.
- Dunn, T. and Holtz-Eakin, D. (2000). Financial capital, human capital, and the transition to self-employment: Evidence from intergenerational links. *Journal of Labor Economics*, 18(2), 282-305.
- EIM (2007). De ontwikkeling van (nieuw) ondernemerschap in 40 aandachtswijken. EIM, Zoetermeer.
- EIM (2009). Kenmerken van ondernemers. Opbouw van drie microdatabases EIM, Zoetermeer.
- Fairlie, R and Robb, A. (2007). Families, human capital and small business: Evidence from the characteristics of business owners survey. *Industrial and Labor Relations Review* 60(2), 225-245.

- Falck, O., Heblich, S. and Luedemann, E. (2010), Identity and entrepreneurship: do school peers shape entrepreneurial intentions? *Small Business Economics* published online 10 July 2010. DOI: 10.1007/s11187-010-9292-5.
- Fornahl, D. (2003), Entrepreneurial activities in a regional context. In: Fornahl, D. and Brenner, T. (eds.), *Cooperation, Networks and Institutions in Regional Innovation Systems*. Cheltenham: Edward Elgar, 38-57.
- Georgellis, Y, Sessions, J.G. and Tsitsianis, N. (2005). Windfalls, wealth, and the transition to self-employment. *Small Business Economics* 25 (5), 407-428.
- Gianetti, M. and Simonov, A. (2009). Social interactions and entrepreneurial activity. *Journal of Economics and Management Strategy* 18(3), 665-709.
- Gibson, D.E. (2003). Developing the professional self-concept: role model construals in early, middle, and late career stages. *Organization Science*, 14(5), 591-610.
- Gibson, D.E. (2004). Role models in career development: New directions for theory and research. *Journal of Vocational Behavior*, 65, 134-156.
- Jimeno, J., Folta, T. Cooper, A. and Woo, C. (1997). Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Administrative Science Quarterly*, 42(4), 750-783.
- Granovetter, M.S. (1973), The strength of weak ties. *American Journal of Sociology* 78(6), 1360-1380.
- Hamilton, B. (2000). Does entrepreneurship pay? An empirical analysis of the returns to self-employment. *Journal of Political Economy*, 108(3), 604-631.
- Hartog, J., Van Praag, M. and Van der Sluis, J. (2010), If you are so smart, why aren't you an entrepreneur? Returns to cognitive and social ability: Entrepreneurs versus employees. *Journal of Economics and Management Strategy*, 19(4), 947-989.
- Hernandez, A.E. (1995). Do role models influence self-efficacy and aspirations in Mexican American at-risk females? *Hispanic Journal of Behavioral Science*, 17, 257-263.
- Hout, M. and Rosen, H. (2000). Self-Employment, family background, and race. *Journal of Human Resources* 35 (4), 670-692.
- Ibarra, H. (1997). Paving an alternative route: Gender differences in managerial networks, *Social Psychology Quarterly* 60, 91-102.
- Kagan, J. (1958). The concept of identification. *Psychological Review* 65, 296-305.
- Kalleberg, A., Knoke, D., Marsden, P. and Spaeth, J. (1996), *Organizations in America: Analyzing Their Structures and Human Resource Practices*. Thousand Oak, CA: Sage.
- Kim, P.H. and Aldrich, H. E. (2005), Social capital and entrepreneurship. *Foundations and Trends in Entrepreneurship* 1 (2), 55-104.
- Klyver, K., Hindle, K. and Schøtt, T. (2007). Who will be an entrepreneur? How cultural mechanisms and social network structure together influence entrepreneurial participation, *Frontiers of Entrepreneurship Research* 27(7), 305-320.
- Koellinger, P., Minniti, M. and Schade, C. (2007). I think I can, I think I can: Overconfidence and entrepreneurial behavior, *Journal of Economic Psychology* 28, 502-527.
- Kram, K.E. and Isabella, L. (1985). Mentoring alternatives: the role of peer relationships in career development. *Academy of Management Journal* 28(1), 110-132.

- Krueger, N., Reilly, M. and Carsrud, A. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing* 15, 411-432.
- Krumboltz, J., Mitchell, A. and Jones, G. (1976). A social learning theory of career selection. *The Counseling Psychologist* 6, 71-80.
- Lafuente, E., Vaillant, Y. and Rialp, J. (2007). Regional differences in the influence of role models : Comparing the entrepreneurial process of rural Catalonia, *Regional Studies* 41(6), 779-795.
- Lockwood, P. and Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology* 73, 91-103.
- Maccoby, E. and Jacklin, C. (1974). *The Psychology of Sex Differences*, CA: Stanford University Press.
- McPherson, M., Smith-Lovin, L. and Cook, J. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*. 27, 415-444
- McPherson, M. and Smith-Lovin, L. (1987). Homophily in voluntary organizations: status distance and the composition of face-to-face groups. *American Sociological Review* 52, 370-379.
- Minniti, M. (2005). Entrepreneurship and network externalities. *Journal of Economic Behavior and Organization*, 57(1), 1-27.
- Mueller, P. (2006). Entrepreneurship in the region: Breeding ground for nascent entrepreneurs? *Small Business Economics*.27, 41-58.
- Nanda, R. and Sorensen, J. (2009). Workplace peers and entrepreneurship. *Harvard Business School Entrepreneurial Management Working Paper* No. 08-051.
- Nauta, M. and Kokaly, M. (2001). Assessing role model influences on students' academic and vocational decisions. *Journal of Career Assessment* 9 (1), 81-99.
- Nicolaou, N., S. Shane, L. Cherkas, J. Hunkin and Spector, T.D. (2008). Is the tendency to engage in entrepreneurship genetic? *Management Science* 54, 167-179.
- Ozgen, E. and Baron, R. (2007). Social sources of information in opportunity recognition: effects of mentors, industry networks and professional forums. *Journal of Business Venturing* 22, 174-192.
- Parker, S. and Van Praag, M. (2006). Schooling, capital constraints and entrepreneurial performance: The endogenous triangle. *Journal of Business and Economic Statistics* 24(4), 416-431.
- Parker, S. (2009). *The Economics of entrepreneurship*, Cambridge University Press, Cambridge, UK.
- Reskin, B. (1999). The determinants of workplace sex and race composition. *Annual Review of Sociology* 25, 335-361.
- Reynolds, P.D., Storey, D. and Westhead, P. (1994). Cross-national comparisons of the variation in new firm formation rates. *Regional Studies* 28, 443-456.
- Ruef, M., Aldrich, H.E. and Carter N.C. (2003). The structure of founding teams: homophily, strong ties, and isolation among U.S. entrepreneurs. *American Sociological Review* 68, 195-222.
- Scherer, R., Adams, J., Carley, S. and Wiebe, F. (1989). Role model performance effects on development of entrepreneurial career preferences. *Entrepreneurship Theory and Practice* 13 (3), 53-71.
- Schutjens, V. and Stam, E. (2003). The evolution and nature of young firm networks: A longitudinal perspective. *Small Business Economics* 21(2), 115-134.

- Shapiro, E., Haseltine, F. and Rowe, M. (1978). Moving up: Role models, mentors, and the 'patron system'. *Sloan Management Review* 6(1), 19-47.
- Shane, S. (2003). *A General Theory of Entrepreneurship: The Individual-Opportunity Nexus*. Cheltenham, Edward Elgar.
- Singh, V., Vinnicombe, S. and James, K. (2006). Constructing a professional identity: how young female managers use role models. *Women in Management Review* 21(1), 67-81.
- Slack, J. (2005), The new entrepreneur scholarships: Self-employment as a means to tackle social deprivation. *Education & Training*, 47 (6), 447-455.
- Sternberg, R. (2009). Regional dimensions of entrepreneurship. *Foundations and Trends in Entrepreneurship* 5, Now Publishers.
- Stuart, R and Abetti, P. (1990). The impact of entrepreneurial and management experience on early performance. *Journal of Business Venturing*, 5(3), 151-162.
- Stuart, T. and Ding, W. (2006). When do scientists become entrepreneurs? The social structure antecedents of commercial activity in the academic life sciences. *American Journal of Sociology* 112(1), p. 97-144.
- Van Auker, H., Fry, F.L. and Stephens, P. (2006a). The influence of role models on entrepreneurial intentions. *Journal of Developmental Entrepreneurship* 11(2), 157-167.
- Van Auker, H., Stephens, P., Fry, F.L. and Silva, J. (2006b). Role model influences on entrepreneurial intentions: A comparison between USA and Mexico, *International Entrepreneurship and Management Journal* 2(3), 325-336.
- Van Praag, M. and Versloot, P. (2007). What is the value of entrepreneurship? A review of recent research, *Small Business Economics* 29(4), 351-382.
- Van Praag, M., A. van Witteloostuijn and Van der Sluis, J. (2009), Returns for entrepreneurs versus employees: The effect of education and personal control on the relative performance of entrepreneurs. Tinbergen Institute Discussion Paper TI 2009-111/3.
- Witt, U. (1991), Economics, sociobiology, and behavioral psychology on preferences. *Journal of Economic Psychology* 12, 557-573.
- Wright, S., Wong, A. and Newill, C. (1997). The impact of role models on medical students. *Journal of General Internal Medicine* 12, 53-56.

Table 1: Descriptive statistics of entrepreneurs and their firms (unit of analysis = entrepreneurs)

	I	II	III	IV	V	VI
Entrepreneurs (#)	All	Without role model	With role model	With role model pre-start	With role model post-start	With role model pre-& post-start
Part A Key statistics of the sample						
N (entrepreneurs)	292	133	159	59	30	70 *
% of the sample	100	46	54	20	10	24
% with role model of crucial importance			28	36	10	29
Number of role models involved (number of unique role models)	229 (187)	0	229 (187)	59	30	140 (98)
Part B Key characteristics of entrepreneurs						
Female (d)	0.39	0.39	0.40	0.43	0.50	0.33
Age	38.47	40.21***	37.04	38.0	37.2	36.1
Age < 30 (d)	0.19	0.14	0.23*	0.24	0.23	0.23
Age 30-44 (d)	0.51	0.49	0.54	0.49	0.53	0.57
Age 45+ (d)	0.26	0.33**	0.21	0.27	0.23	0.14
Higher education (d)	0.54	0.43	0.63***	0.61	0.87***	0.54
Born in NL (d)	0.81	0.77	0.84	0.88	0.73	0.86
Parent Entrepreneur (d)	0.64	0.65	0.64	0.75*	0.50	0.61
Entrepreneur experience (d)	0.27	0.38***	0.17	0.24	0.20	0.10
Entrepreneur experience > 5 years (d)	0.15	0.23***	0.08	0.08	0.07	0.09
Part C Key characteristics of the entrepreneurs' firms						
Region Amsterdam (d)	0.26	0.23	0.28	0.27	0.33	0.26
Region Rotterdam (d)	0.38	0.44*	0.33	0.39	0.17	0.34
Region Utrecht (d)	0.37	0.33	0.40	0.34	0.50	0.40
Sector retail (d)	0.28	0.35**	0.23	0.32	0.20	0.16
Sector hotels/restaurants (d)	0.14	0.17	0.13	0.14	0.20	0.09
Sector business services (d)	0.33	0.26	0.38**	0.32	0.40	0.43
Sector other services (d)	0.24	0.22	0.26	0.22	0.20	0.33
Shared ownership (d)	0.35	0.37	0.33	0.32	0.30	0.34
Home business (d)	0.51	0.51	0.51	0.46	0.63	0.50

*In 42 cases the *same* role model.

The asterisks in columns II-III indicate the outcome of 2-tailed unpaired t-tests of the difference between the average values of the particular variable in the group of entrepreneurs with role models versus those without role models. The column(s) in which the asterisk(s) are depicted has a significantly higher average value for that variable. The asterisks in columns IV to VI indicate to what extent entrepreneurs with role models in different stages (pre-start, post-start of both) have similar distributions. The asterisks pertain to results from a Pearson Chi square test (for dummy variables) and an F-test (for continuous variables). Again, the column(s) in which the asterisk(s) is depicted has a significantly higher average value. A significant difference at the 10% (5%) [1%] level is denoted by * (**) [***].

Table 2: Correlation table independent variables (unit of analysis = entrepreneurs, n=292)

	1	2	3	4	5	6	7
1 Female (d)	1						
2 Age (in years)	0.19*	1					
3 Age ² / 100	0.16*	0.99*	1				
4 Education high (d)	0.00	0.06	0.05	1			
5 Dutch nationality (d)	0.01	-0.02	-0.01	0.11	1		
6 Parent entrepreneur (d)	0.08	-0.02	0.01	-0.11	-0.06	1	
7 Entrepreneur experience (d)	-0.08	0.11	0.13*	0.00	-0.07	0.08	1
8 Entr. Experience > 5 years (d)	-0.05	0.26*	0.27*	-0.08	-0.02	0.11	0.68*

* p<.05

Table 3: Functions of role models (unit of analysis = role models)

Function	Statement pre-start (post-start)	I	II	III	IV
Percentage (fully) agreeing, by (sub)sets of role models		Role models of crucial importance	All role models	Role models pre-start	Role models post-start
(i) Inspiration / motivation	I <u>admired</u> this entrepreneur before I started (in the phase of the further development of) my company	0.80**	0.68	0.72	0.64
(ii) Self-efficacy	With this entrepreneur in mind, I thought: ‘if <u>(s)he can do this</u> , I can do this too’	0.56	0.57	0.56	0.59
(iii) Example	This entrepreneur has been a <u>positive example</u> for me at the start-up (further development) of my company	0.91*	0.83	0.83	0.83
(iv) Support	This entrepreneur has really <u>supported</u> me with starting up (after starting up) my firm	0.73	0.71	0.65	0.80**
N		64	229	129	100

The asterisks in column I indicate the outcome of 2-tailed unpaired t-tests on probabilities (pr-test) of the difference between the probability score of the particular variable in the group of entrepreneurs with role models that are of crucial importance and those that are *not* of crucial importance. The asterisks in column IV indicate the outcome of 2-tailed unpaired t-tests on probabilities (pr-test) of the difference between the probability score of the particular variable in the group of entrepreneurs with role models at pre-start-up and afterwards. A significant difference at the 10% (5%) level is denoted by * (**).

Table 4: Probit regression of role model presence (unit of analysis = entrepreneurs)

Dependent variable = 1 for entrepreneurs with a role model (at any stage in columns I and II) and 0 for entrepreneurs who have not acknowledged any role model. The dependent variable in column III = 1 for entrepreneurs who <i>(fully)</i> agree that their role model has been of crucial importance pre- and/or or post-start-up and = 0 otherwise.			
	Marginal effect on role model presence (pre- and/or post-start)		
	I	II	III
	With role models pre- and/or post-start	With role models pre- and/or post-start	With role models pre- and/or post-start of crucial importance
Female (d)	0.02 (0.18)	0.00 (0.19)	0.39 (0.21)*
Age (in years)	0.01 (0.05)	0.03 (0.06)	-0.03 (0.06)
Age ² / 100	-0.03 (0.07)	-0.06 (0.07)	0.038 (0.08)
Education high (d)	0.56 (0.17)***	0.45 (0.18) **	0.61 (0.21)***
Dutch nationality (d)	0.12 (0.21)	0.07 (0.22)	-0.01 (0.24)
Parent entrepreneur (d)	0.23 (0.20)	0.25 (0.20)	0.25 (0.22)
Entrepreneur experience (d)	-0.52 (0.26) **	-0.54 (0.27) **	0.12 (0.29)
Entrepreneur experience > 5 years (d)	-0.40 (0.34)	-0.39 (0.35)	-0.51 (0.40)
Firm controls included	no	yes	yes
N ^{a)}	256	256	256
Log pseudo likelihood	-157.22	-153.17	-129.73
Prob> χ^2	< 0.0001	< 0.0001	0.0034
Pseudo R ²	0.110	0.133	0.092

Standard errors in parentheses. A constant term and city dummies are included in all equations. The firm controls included in specification II and III are all measured at start-up and include sector dummies, the firm size at start-up (FTE) and whether the entrepreneur shared the ownership with others (dummy). A significant coefficient at the 10% (5%) [1%] level is denoted by * (**) [***].

^{a)} Out of the sample of 292 observations, 256 had no missing values in the independent variables.

Table 5: Panel probit regression of role model function [1=(fully) agree with importance function & 0=neutral / not agree with importance function] (unit of analysis = role models)

	Marginal effect on assigning the specified function to the entrepreneurial role model			
	Inspiration/ motivation	Self-efficacy	Learning by example	Learning by support
	I	II	III	IV
Age (in years)	0.43 (0.29)	-0.21 (0.30)	-0.31 (0.28)	0.22 (0.25)
Age ² / 100	-0.55 (0.36)	0.21 (0.38)	0.38 (0.36)	-0.29 (0.32)
Education high (d)	-0.49 (0.73)	-0.20 (0.78)	-0.85 (0.70)	0.38 (0.63)
Entrepreneur experience (d)	0.57 (0.93)	2.01 (1.07)*	0.54 (0.90)	-0.01 (0.82)
Role model post-start (d)	-0.77 (0.42)*	0.09 (0.38)	0.00 (0.43)	0.92 (0.41)**
N ^{a)}	211	217	217	217
Log likelihood	-104.62	-121.67	-88.07	-111.22

Standard errors in parentheses. Random effects based on the panel character of the data due to the presence of entrepreneurs with role models in both phases. A significant coefficient at the 10% (5%) [1%] level is denoted by * (**) [***]. A constant term and city dummies are included in all equations. The models include controls for gender, nationality and parental background, see Table 1.

^{a)} There are 217 complete observations, except for function “inspiration/motivation” that had six observations with answer “Don’t know” in the dependent variable.

Table 6: Descriptive statistics: Homophily characteristics of entrepreneurs and role models

Entrepreneur-role model homophily characteristics	All 187 unique “entrepreneur -role model”- combinations
Gender (% equal)	68
Female entrepreneur (% equal)	36
Male entrepreneur (% equal)	87
Nationality (% equal)	79
If entrepreneur from NL (% equal)	83
If entrepreneur from abroad (% equal)	44
City (% equal)	42
Sector (% equal)	40
N	187

Table 7: Paired t-tests: Similarity between entrepreneurs (E) and their role models

	All 187 unique entrepreneur-role model combinations		
	I	II	III
	Entrepreneur	Role model	Difference (t-test)
<i>Human capital</i>			
Age < 30 (d)	0.22	0.05	0.18***
Age 30-44 (d)	0.56	0.43	0.13***
Age 45+ (d)	0.19	0.46	-0.27***
Higher education (d)	0.61	0.61	-0.00
<i>Firm performance</i>			
Firm size (current FTE)	3.5	19.0	-15.6**
Products/services considered novel (d)	0.34	0.41	-0.06
Novel technology applied (d)	0.26	0.34	-0.07*
Percentage international clients	0.14	0.15	-0.01
Percentage local clients	0.60	0.53	0.06*
N	187	187	187

The asterisks in column III denote the significance of the difference tested by a 2-tailed paired t-tests as indicated. A significant difference at the 10% (5%) [1%] level is denoted by * (**) [***].

Table 8: Panel Probit Regression of the source of the Role Model (unit of analysis = role models)

	I		II
	Strong Ties		Weak Ties
	Family (d)	Friends (d)	(Previous) employer / colleague (d)
Role model function: inspiration / motivation	1.43 (0.62)**	-0.59 (0.31)*	-0.02 (0.23)
Role model function: increasing self-efficacy	-2.06 (0.73)***	-0.14 (0.22)	0.39 (0.20)*
Role model function: learning by example	0.45 (0.98)	0.16 (0.29)	-0.18 (0.25)
Role model function: learning by support (mentoring)	2.05 (0.67)***	0.22 (0.23)	-0.27 (0.16)*
Role model post-start (d)	-1.24 (0.80)	0.68 (0.39)*	-0.17 (0.32)
N (nr of unique individuals) ^{a)}	211 (149)	211 (149)	211 (149)
Log likelihood	-69.36	-79.71	-102.61

Standard errors in parentheses. Random effects based on the panel character of the data due to the presence of entrepreneurs with role models in both phases. Age, education, experience, nationality and gender controls are included in the analysis but the coefficients are not included in the table. A constant term and city dummies are included in all equations. A significant coefficient at the 10% (5%) [1%] level is denoted by * (**) [***].

^{a)} Out of the 229 role models identified by the entrepreneurs in the sample, 211 (of which 149 unique individuals) had no missing values in the independent variables.