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ENTREPRENEUR'S EXIT EXPERIENCE AND GROWTH ASPIRATIONS

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ENTREPRENEUR'S EXIT EXPERIENCE AND GROWTH ASPIRATIONS

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ABSTRACT

This paper examines the moderating effect of social norms on the growth aspirations of entrepreneurs with exit experience in their subsequent entrepreneurial activities. Our analysis shows that previous entrepreneurial exit experience exercises a positive influence on individuals' entrepreneurial growth aspirations. The findings also show that social group–level prevalence of fear of failure moderates positively this relationship and that the social context constitutes an important influence on individual's entrepreneurial aspirations.

INTRODUCTION

Although entrepreneurial exit is an integral part of the entrepreneurial process, research on exits is still in its infancy (DeTienne, 2009; Wennberg, Wiklund, DeTienne, & Cardon, 2009). The exit of entrepreneurs from entrepreneurial ventures releases entrepreneurial capacity to be deployed in follow-on ventures (Hessels, Grilo, Thurik, & van der Zwan, 2009). Although, at the population level, the number of entrepreneurial exits is highly correlated to the number of entries (Audretsch, Santarelli, & Vivarelli, 1999; Audretsch & Vivarelli, 1995), the empirical literature has almost exclusively focused on the entry phenomenon while largely neglecting the study of the exit phenomenon, its predictors, processes, and consequences (Wennberg et al., 2009). One such neglected aspect concerns the importance of the exit phenomenon as a source of, and as an encapsulation of entrepreneurial learning. In this paper, we are motivated by the observation that exit events can be a valuable and significant source of experiential learning that can be potentially transferred across ventures (Shepherd, 2003); Politis, 1995; Gong, Baker, & Miner, 2006). When operating an entrepreneurial venture, entrepreneurs learn through improvisation and through experience (Corbett, 2005). The experience of resolving problems facing new ventures prompts entrepreneurs to develop heuristics and organize approaches that can be applied in analogous situations, such as subsequent ventures (Bingham, Eisenhardt, & Furr, 2007; Gentner, Loewenstein, & Thompson, 2003; Lewis, Lange, & Gillis, 2005). For this reason, entrepreneurial exits constitute an invaluable mechanism of experience accumulation in entrepreneurial populations and an important determinant of population-wide entrepreneurial capacity (Hessels et al., 2009). It is our objective to study how mechanisms pertaining to the individual and social group jointly influence the transfer of exit experiences to benefit subsequent entrepreneurial ventures.

Although the potential value of previous exit experience has been previously recognised in the entrepreneurship literature, there has been little examination of how, and under which conditions, entrepreneurs are able and willing to transfer previous exit experience to benefit new ventures (Wennberg, 2009). In this paper we draw upon the social psychological and sociological research on peer effects as the imperative human setting through which individuals actions and experiences are reflected and valued, shaping how previous experiences are perceived and re-enacted (or not) by individuals' in their future courses of action.[1] This literature highlights the pertinent mechanism through which social norms and valuations are carried is made up by an individual's social peers. To the extent that the individual's social peers value entrepreneurship and do not regard the inevitable errors associated with trial and error learning as a source of personal shame, the greater

will be the likelihood that previous exit experience will have a positive influence on the growth aspirations of subsequent ventures. In this study we set out to empirically examine this proposition by examining cross-level influences on social groups on individual entrepreneurial behaviour. Using a unique multi-level database containing information on individuals' past venturing activities and current entrepreneurial ambitious entrepreneurial from which we have first-hand experience, we investigate the degree to which previous exit experience is transferred to benefit a subsequent venture by being moderated by the social conditions faced by the individual. At the individual level, we predict that the owner's previous exit experience will become a more important determinant of entrepreneurial growth aspirations when social values of the pertinent social reference group are less tolerant of uncertainty and failure.

Using refined data from the most recent waves of Global Entrepreneurship Monitor (GEM) dataset, from which we have first-hand experience, our empirical work models the degree to which previous exit experience is transferred to benefit a subsequent venture by being moderated by the social conditions faced by the individual. We combine GEM's adult-population data for years 2000 – 2008 to cover over 60 countries and interviews with over 900 000 individuals into the largest dataset ever created for the study of entrepreneurial processes at multiple levels of analysis. At the individual level, we predict that the owner's previous exit experience will become a more important determinant of entrepreneurial growth aspirations when social values of the pertinent social reference group are less tolerant of uncertainty (Hayward, Shepherd, & Griffin, 2006) and failure (Shepherd, 2003).

This research advances previous research by conceptualizing and implementing testing a multi-level model of both individual and social group –level influences on entrepreneurial growth aspirations. By so doing, we seek several important contributions to the literature. To the nascent literature on entrepreneurial exit, this is the first study to test the effect of previous exit experience on entrepreneurs' future growth aspirations, thereby considering the exit experience as a source of learning entrepreneurial skills. Most studies on entrepreneurial exits have either sought to predict the exit event or to understand the financial (and otherwise) consequences of the exit for the entrepreneur. Second, we consider not only individual-level effects, but also, social group effects on how the experience from previous exits is transferred to benefit a given entrepreneur's subsequent ventures, thereby moving beyond individual-level analyses of the phenomenon. Third, we test our model with data from over 60 countries, thereby providing the most extensive and most robust test thus far of the effects of entrepreneurial exit for the entrepreneur. Fourth, as a methodological contribution, we construct and test a multi-level selection model, which prompted us to develop new techniques for multi-level analysis, thereby advancing the methodological approaches for the study of entrepreneurial phenomena using multi-level data.

HYPOTHESES

What makes exit experience important? Research on entrepreneurial learning suggests that the skills and knowledge relevant to successfully managing and operating a business are mainly experiential in nature (Starr & Fondas, 1992). Although other aspects of human capital may have an impact on an individual's entrepreneurial ability (Evans & Jovanovic, 1989), the learning literature would suggest that previous entrepreneurial experience is likely to be the most important aspect of human capital in predicting entrepreneurial success. This argument is supported by social learning theory (Bandura, 1977), which states that one of the most powerful ways of learning is through enactive mastery (i.e. learning by doing). Specifically, the studies of habitual entrepreneurs have highlighted the importance of previous experience for the successful sale of an entrepreneurial venture (Ucbasaran, Wright, & Westhead, 2003), suggesting that the experience of

operating a previous business assists in the management of subsequent ones. Repeat entrepreneurs are likely to have larger amounts of personal financing and greater access to external sources of financing (Westhead & Wright, 1998), and they tend to create firms with higher growth potential (Colombo & Grilli, 2005). We therefore hypothesise that prior exit experiences should increase the likelihood of growth oriented venturing:

Hypothesis 1a: An individual's experience from previous entrepreneurial exits will be positively related to his or her entrepreneurial growth aspirations.

Research on entrepreneurial aspirations that relies on theories on both individual and group attitudes typically posits that intentions precede aspirations and attitudes precede intentions (Krueger, Reilly, & Carsrud, 2000). Attitudes can be seen as the weighted sum of perceived consequences and the likelihood of different outcomes of the behaviour, including social norms and individual-level intrinsic rewards. This line of theorising also holds that entrepreneurial aspiration is also facilitated by a person's self-efficacy (Zhao, Seibert, & Hills, 2005). Self-efficacy has been found to greatly influence entrepreneurial behaviours and improving the perceived feasibility of certain courses of action and is therefore seen as vital to increase entrepreneurial intentions (Ajzen, 1991; Krueger et al., 2000). From the theory of self-efficacy follows that individuals who believe that can succeed in starting and growing a firm do so because they believe themselves to have the requisite skills and abilities to succeed. We therefore expect:

Hypothesis 1b: An individual's perception of entrepreneurial self-efficacy will be positively related to his or her entrepreneurial growth aspirations.

A specific component of self-efficacy relates to how individual's aspirations are shaped by them observing the behaviour of others. Knowledge of other entrepreneurs has been found to affect individual-level intentions (Davidsson, 1991). Being exposed to other entrepreneurs leads individuals to indirectly draw upon their vicarious experience by being able to observe the actions and behaviour associated with entrepreneurship, thereby forming perceptions of the social desirability of entrepreneurial behaviours (Sørensen, 2007b)). Personal familiarity with entrepreneurs may also support experience sharing, and thus, imbue the individual with a perception of entrepreneurial skills. Consistent with this explanation, (Autio and Wennberg forthcoming) found the individual's personal knowledge of other people who have started new firms exercised strong, positive influence on his or her own entrepreneurial propensities. It is equally likely that the exposure to other entrepreneurs and associated vicarious experience should encourage growth-oriented entrepreneurship. We therefore posit:

Hypothesis 1c: An individual's personal awareness ties with other entrepreneurs will be positively related to his or her entrepreneurial growth aspirations.

In the psychological research tradition, an individual's fear of failure is intimately related to risk-taking behaviour (Hancock & Teevan, 1964). Fear of failure has been found to exercise a central influence on individual's achievement motivation and their occupational aspirations (Burnstein, 1963). (Wagner & Sternberg, 2004) investigated start-up behaviour in ten German planning regions and found that fear of failure in a region was negatively associated with start-up behaviour. (Vaillant & Lafuente, 2007) used Spanish GEM data for 2003 and found that the industrial traditions and low rates of fear of failure in some regions, in particular Catalonia, were associated with start-up behaviour. Summarising, we expect:

Hypothesis 1d: An individual's perceived fear of failure will be negatively related to his or her entrepreneurial growth aspirations.

Influence of Social Groups on Entrepreneurial Aspirations

An approach to investigate social effects on socio-economic action that is rather common in the economics and sociological literatures is by using structural data on relationships and/or the actual behaviour of peers or social referents to infer the behaviour of a focal individual (Autio & Wennberg, 2009; (Nanda & Sorensen, ; Sørensen, 2007c). Such approaches do not face the same problem of unobserved differences between an individual's intention and actual behaviour but face different problems such as the endogenous nature of social identification and actual behaviour – the so-called "reflection problem" (Manski, 1993). When investigating whether average behaviour in a group influences the behaviour of an individual belonging to the group, what is "reflected" depends both on the distribution of behaviour in the population, and the specification of the reference group. Research on social structures and job search maintains that the feasibility of career choices is strongly influenced by the individual's social environment (Granovetter, 2005; Sørensen, 2007a). Hence, knowledge of similar individuals' career choices and the perceptions of appropriateness related to such career choices shape the focal individual's social opportunities and constraints, suggesting that familiarity with other entrepreneurs should enhance the probability of engaging in entrepreneurial activities. Summarising, we hypothesise:

Hypothesis 2a: The prevalence of personal awareness ties with entrepreneurs within a given individual's social reference group will exercise a positive influence on that individual's entrepreneurial growth aspirations.

Social groups have been identified as perhaps the strongest social entity affecting perceived social norms – the shared ideas regarding 'appropriate' behaviours (Rimal, Greenberg, & Rom, 2005). Social psychological as well as sociological research has investigated social groups as groups based on educational attainment (Cohen, 1977) or workplace affiliation (Goodman & Haisley, 2007; Kulik & Ambrose, 1992). Perceived group norms may send either positive or negative signals regarding the desirability of entrepreneurial choices. On the one hand, social connections in groups drive individuals to pursue high-status activities (i.e. entrepreneurship) because of their beliefs that status signals intrinsic quality (e.g. 'I am leading a good and proper life'), and actors in high status positions reap attention and rewards from this attention (Podolny, 2005). Conversely, we may also expect that social norms signalling negative status of entrepreneurship should exercise an inhibiting influence on entrepreneurial aspirations. Specifically, if social norms signal punishing attitudes toward entrepreneurial failure, this may exercise a negative influence on entrepreneurial risk-taking by individuals:

Hypothesis 2b: The prevalence of negative attitudes toward failure within a given individual's social reference group will exercise a negative influence on that individual's entrepreneurial growth aspirations.

Finally, we propose that social norms may also signal the general feasibility of the entrepreneurial option. One significant barrier to entrepreneurial aspirations is constituted by the perceived difficulty of achieving success through entrepreneurial efforts (Cullen & Gordon, 2007; Eckhardt & Ciuchta, 2008; Levie & Autio, 2008). If achieving success through entrepreneurship is perceived as difficult, the individual will be less likely to choose the entrepreneurial option (Bowen & De Clercq, 2008; Cullen et al., 2007). We contend that a strong signal of feasibility is formed when many individuals within the social reference group express confidence that the y possess the necessary skills and competences to successfully launch an entrepreneurial venture. Such signals would translate into a higher perceived feasibility at the individual level, thereby boosting the individual's entrepreneurial aspirations (Autio & Acs, 2009; Krueger et al., 2000). Therefore, we predict:

Hypothesis 2c: The prevalence of entrepreneurial self-efficacy beliefs within a given individual's social reference group will exercise a positive influence on that individual's entrepreneurial growth aspirations.

Cross-Level Interactions between Group Influences and Individual Effects

The experiential learning gained from previously having exited a firm should exercise a positive influence on a given individual's entrepreneurial growth aspirations. The importance of such an experience will only be boosted if the individual operates in a social context that sends negative status signals regarding entrepreneurship. If the prevalence of negative attitudes toward failure within a given individual's social reference group is high, this will increase perceived downside risks associated with entrepreneurial ventures and boost the importance of previous exit experience as a regulator of entrepreneurial growth aspirations. Therefore, we hypothesise:

Hypothesis 3a: *If the prevalence of negative attitudes toward entrepreneurial failure is high within a given individual's social reference group, that individual's previous exit experience will exercise a stronger influence on his or her entrepreneurial growth aspirations.*

Once the entrepreneurially experienced individual has again chosen the entrepreneurial option, the same opportunity costs would drive him or her to seek faster growth in an effort to recoup returns that are commensurate with the opportunity costs involved. The pursuit of such returns will be easier, and the effect of previous exit experience therefore stronger, in resource munificent and opportunity-rich environments. The presence of resources and opportunities would be signalled by the prevalence of awareness ties toward entrepreneurs within the individual's social reference group, as well as by the widespread positive perceptions of the feasibility of entrepreneurial growth in the social reference group. In addition, research has shown that the attitudes and behaviour of demographically similar others can influence individual choices simply through exposure (Dobrev, 2005). Thus, if an individual's social peers perceive opportunities and feasible growth; this will boost the effect of that individual's previous exit experience on his or her growth aspirations. This leads us to hypothesise*:*

Hypothesis 3b: If the prevalence of personal awareness ties with entrepreneurs is high within a given individual's social reference group, the effect of that individual's previous exit experience on his or her entrepreneurial growth aspirations will be stronger.

Hypothesis 3c: If the prevalence of entrepreneurial self-efficacy beliefs is high within a given individual's social reference group, the effect of that individual's previous exit experience on his or her entrepreneurial growth aspirations will be stronger.

METHODOLGY

Data

We used the GEM dataset as our source of individual-level data on individual-level entrepreneurial behaviours. We combined nine years (2000-2008) of adult-population survey data from the Global Entrepreneurship Monitor GEM survey to form an initial database of 902,533 (un-weighted) interviews of adult-age individuals in 63 countries. This data provided our base sample. We used the same dataset to compute indices of the social group norms and attitudes, perceived self-efficacy, and vicarious exposure. The social reference group was defined on the basis of country, age category, gender, education, and household income.

Variables

The dependent variable in our study measures the entrepreneurial growth aspirations of identified nascent and new entrepreneurs. Each individual was asked to estimate their expected number of employees within 5 years' time. Because our theory centres on the influence of experiential learning from previous entrepreneurial activities on subsequent entrepreneurial activities, we argue that growth aspirations provide a better test of our theory than eventual realized growth. Exit experience from previous entrepreneurial activity rationalizes the recognition of entrepreneurial opportunities and enhances the considerations of the likelihood of success in subsequent activities. Growth aspirations thus reflect a 'best guess', under uncertainty, regarding both expected and required success of the new ventures, as influenced by both individual and contextual factors. Although our measure does not reflect actual growth, and most guesses are likely to be optimistic, our measure nevertheless provides a good reflection of considerations driving strategic allocation of effort in entrepreneurship. The weighted average was 9.34 expected jobs in five years' time.

Predictor Covariates

Individual Level (level-1) Predictor Covariates

An individual's attitudes matter for growth aspirations. The individual level predictors are all obtained from the GEM dataset. Because GEM is a large-scale and very expensive social survey, only single-item dichotomous scales are used to measure each of these items[2]. We constructed four individual level predictors to capture attitudes affecting growth aspirations:

Exit Experience. Our theoretical model predicts that exit experience from previous entrepreneurial activity will be associated positively with growth aspiration in subsequent entrepreneurial activity. Individual's previous exit experience is captured by asking whether the individual had, in the past 12 months, sold, shut down, discontinued or quit a business owned and managed by them (1=yes).

Ties with Entrepreneurs. Vicarious exposure has been shown to influence entrepreneurial attitudes and behaviours by individuals (Davidsson & Honig, 2003) and is captured by asking whether or not the individual knew someone personally who had started a business in the past 2 years (1=yes)

Fear of Failure. Fear of failure might prevent an individual from seeking rapid growth in an entrepreneurial venture. And was captured using a dummy variable (1=yes) that measures an individual's lack of confidence in her capability to cope with endogenous or exogenous uncertainty associated with new business ventures, as well as the fear of anticipated consequences of such failure.

Self Efficacy. Finally, perceived self-efficacy, indicating whether the individual perceived to possess the knowledge, skills, and experience required to start a new business (Krueger et al., 2000) was captured using a dummy (1=yes).

Control Covariates

Individuals' entrepreneurial growth aspirations may be influenced by a number of factors other than his or her previous exit experience and attitudinal characteristics. Relevant extraneous influences include both demographic characteristics as well as attitudinal ones.

Inverse Mills Ratio. This is a control predictor that controls for an individual's self-selection into entrepreneurship based upon individual as well as prevalent country level attributes. The operationalization of inverse mills ratio is explained in the section "Selection Correction".

Age and Age Squared. Both GEM and other social surveys show that an individual's age is an important influence on entrepreneurial growth aspirations, with younger individuals generally exhibiting stronger ambitions than older ones. We therefore controlled for the age of the

individual, as well as the mean centred squared term of age in order to capture any curvilinear effects. These two control predictors are continuous in nature.

Gender. Another important influence on individual growth aspirations is constituted by gender, with women typically exhibiting more modest growth aspirations than men. Male is coded as 1 and female as 2

Education and Household Income Tier. Both these control predictors are categorical in nature and have also been shown to be associated with entrepreneurial growth aspirations. Education has been operationalized to include five categories, namely, "none", "some secondary", "secondary", "post secondary" and "graduate" educational experience. Household income includes three categories namely, "lower middle", "middle" and "upper middle" tiers.

Current Jobs. As a methodological control, we controlled for the individual's current number of employees so as to capture idiosyncratic variation in initial conditions when analysing influences on growth expectations. This is a continuous variable.

OECD dummy. We included a dummy for OECD countries (1=OECD), which allows us to observe individual differences in entrepreneurial growth aspirations across OECD and non-OECD countries.

Micro angel. Finally, an individual's previous activities may matter for entrepreneurial growth aspirations. In this study, we controlled an individual's previous exposure to the entrepreneurial process by controlling whether or not the individual had, in the past three years, personally provided funds for a new business started by someone else (1=yes).

Social Group-Level (level-2) Predictor Covariates

Reference groups were formed based on gender (dummy variable), age (5 categories: 18-26 years old; 27 – 34 years old; 35 – 42 years old; 43 – 50 years old and 51 – 64 years old) education (five levels), and socioeconomic status (3 equally large strata in each country) for each of the 63 countries in the GEM data, we achieve a time-variant matrix of reference group configuration with 7337 unique cells with a mean of nearly 125 individuals in each cell (group). For each social group, we averaged individual-level responses to questions measuring the fear of failure, vicarious experience, and perceived self-efficacy, using dummy variables explained above. The group means of these variables were then used as proxies of social group attitudes and vicarious exposure. We thus have three social group-level predictor covariates in our analysis that would allow us to observe the contextual influence of social norms on individual's entrepreneurial growth aspirations.

Interaction Terms

The interaction terms were computed as follows. First, the mean of individuals' exit experience was computed for each country. Second, this computed mean was then subtracted from the individual-level exit experience for each country, so that mean centred exit experience was computed separately for individuals in each country. Third, the interaction term was computed by multiplying the social reference group predictors with this variable (Hofmann & Gavin, 1998). The distribution of individual exit experience dummy varied considerably across countries, which justified mean centring based on country means of exit experience dummy. We thus have three interaction terms in our analysis that would allow us to observe the cross-level moderation effects (interaction) of social norms on an individual's exit experience towards growth aspirations in subsequent entrepreneurial activities.

Selection Correction

The selection equation was performed using a multi-level panel probit equation with the R software package (Kyriazidou, 2001; Wooldridge, 1995). We modelled the selection equation as a random intercept generalized linear mixed probit model fitted by Laplace approximation

(Appendix A), with individual-level instruments at level 1 and country-level instruments at level 2[3]. All thirteen instruments were highly significantly associated with an individual's entrepreneurial entry ($p<0.000$), thereby suggesting strong self-selection. The ML selection correction parameter (λ), commonly known as the Inverse Mill's Ratio (IMR), was subsequently calculated[4].

Methods and Procedures

The analysis was carried out in two stages. In the first stage we carried out the MLS that yielded our selection correction parameter (λ: Inverse Mill's Ratio) to be used as one of the controls in the second stage. In the second stage we carried out our outcome regression using ML random coefficient model, where individual level factors at level 1 and social group level factors at level 2, as well as their interaction estimates an individual's entrepreneurial growth aspirations.

Our dataset was cross-sectional panel data, grouped by country and year, and combining observations at the individual and country levels. We thus had hierarchical and clustered data, in which the assumption of independence of observations is violated. This increases the possibility of 'false positives' in ordinary OLS analysis due to under-estimation of standard errors because of their non-normal distribution (Hofmann & Griffin, 2000) thus resulting in an over-estimation of statistical significance. We therefore applied hierarchical linear modelling, using a generalised least square (GLS) procedure to estimate fixed parameters and maximum-likelihood estimates of variance components (Raudenbush, 1988) with an unstructured covariance specification; (Kozlowski & Klein, 2000; Rabe-Hesketh & Skrondal, 2005). Random effects analysis allows regression coefficients and intercepts to vary across social groups, and it also makes it possible to test cross-level moderation effects (Martin, Cullen, & Johnson, 2007). The GLS approach allows the standard errors to vary across groups and provides a weighted level-2 regression so that groups with more reliable level-1 estimates are given greater weights and therefore exercise greater influence in the level-2 regression (Hofmann & Griffin, 2000). This results in more accurate estimates of cross-level effects. In our data, we had both individual-level predictors of entrepreneurial growth aspirations, as well as reference group-level controls and direct and moderation effects.

RESULTS

Table 1 provides the descriptive statistics for all the predictors (from level-1 and level-2), interaction terms and the controls used throughout our ML estimation regression equations. Table 2 shows the correlation matrix and Table 3 shows the primary results of our analysis. All results are non-standardized estimates. Random coefficient multi-level model is reported in Columns 1, 2 and 3, along with estimates for the fixed part (estimates of coefficients) and random part (variance estimates) as well as the model fit statistics.

A precondition for multi-level analysis is that significant between-group variance exists for the dependent variable (Bliese, 2000; Hofmann, 1997; Hofmann et al., 2000). We found that 3% of the total variance within the data resided between groups. A Chi-square test suggested that the social reference group-level variance was both non-trivial and highly significant (random-coefficient as indicated by Likelihood Ratio (LR) test: $\chi2 = 154.26$ ($p<0.000$)), thereby allowing us to move to the next phase of our analysis.

The model in Column 1 in Table 3 provides substantial support for the individual-level hypotheses. Column 1 reports the estimated effect of the four individual-level predictors on venture growth aspirations. Self-selection into entrepreneurship positively influences an individual's growth aspirations ($p < 0.001$). Previous experience of entrepreneurship and exit ($p < 0.05$), familiarity ties with other entrepreneurs ($p < 0.001$), and perceived self-efficacy ($p < 0.001$)

are positively associated with growth aspirations, while fear of failure ($p < 0.001$) is negatively associated with entrepreneurial ambition. The model fit statistics show that the inclusion of the predictors in Column 1 significantly improves model fit. The output of this model is shown in Column 1 of Table 3.

The model in Column 2 in Table 3 provides substantial support for social group-level hypotheses. Column 2 reports the estimated association of group-level predictors with individual-level growth aspirations. A higher level of exposure to other entrepreneurs in the individual's social group has a positive influence on growth aspirations ($p < 0.1$), while the social group's negative attitudes to failure ($p < 0.05$) and perceived entrepreneurial self-efficacy ($p < 0.05$) have a negative influence on the individual's growth aspirations. The negative association between group-level self-efficacy beliefs and individual-level growth aspirations is counter to our hypothesis which was that this would signal greater entrepreneurial opportunity in the entrepreneur's context, and would enhance the entrepreneur's growth aspirations. However, this negative association perhaps is a signal of more intense competition from the individual's social peers. There could be a crowding effect occurring within groups, which would introduce competition for scarce resources. This would then dampen growth expectations.

The model in Column 3 in Table 3 supports the existence of cross-level moderating effects of social group-level norms and attitudes on an individual's experience from previous entrepreneurial exit on entrepreneurial growth aspirations. Because the model in Column 3 includes interaction terms, the marginal fixed effect of each variable will depend on the value of the other variable(s) in the interaction. There is a positive interaction ($p < 0.05$) between group-level fear of failure and an individual's previous experience on his or her growth aspirations, which supports Hypothesis 3a that social reference group's fear of entrepreneurial failure will moderate positively the effect of an individual's experience from previous entrepreneurial exit on his or her entrepreneurial growth aspirations.

The inverse Mill's ratio is shown as statistically significant and positively influencing growth aspirations in all the three models tested, suggesting that unobserved variables have indeed influenced the self-selection of individuals into entrepreneurship and that the effect of unobservable on growth aspirations is positive. The individual-level controls are all statistically significant in all the three models except age and square of age. The negative sign of the coefficient of gender suggests males have a greater growth aspiration and the positive signs of education and household-income tier suggest that individuals with higher education and an inclusion into higher household income have greater growth aspirations. The control used for the number of current jobs is statistically significant in all three models and bears a positive sign.

DISCUSSION AND CONCLUSION

In this study we posited a multi-level model of how social norms and attitudes related to entrepreneurial aspirations through social interaction. Our empirical findings suggested that not only does the norms and attitudes of the social group exhibit an influence on entrepreneurial behaviour but that it also *reinforces* the attitudes and perceived self-efficacy of the individual. As such, our study adds to the literature on how social networks affect job-related attitudes (Ibarra, 1997; Ibarra & Andrews, 1993) by showing how social reference groups affect individuals' aspirations for growth. Specifically, this study looks not only into how an individual's experiential learning accumulated from exiting from a previous entrepreneurial activity influences his or her growth aspirations in subsequent entrepreneurial activities, but also on how the norms and attitudes of his or her social reference group moderate those aspirations, thereby making this study a multi-level analysis. The hypotheses derived from this model received ample support in the

regression analysis: social reference group-level variables such as an individual's ties with other entrepreneurs in the social group and the group's perception of fear of failure are important predictors of an individual's growth aspirations. In particular, our study finds moderating effects of the group's perception of failure on an individual's exit experience towards his or her growth aspirations.

While this is one of the few studies that demonstrate the effect of reference group-level moderation on individual-level growth aspirations, group-level moderation effects were weaker than the direct effect of individual-level direct predictors of entrepreneurial growth aspirations. Except for age, others such as gender, education, household income, being a business angel, self efficacy, knowing other entrepreneurs, fear of failure and exit experience, exhibited strong, direct influences on growth aspirations, stronger than any moderation influences. This pattern shows that, although contextual influences cannot be ignored, the individual remains the central agent in entrepreneurial endeavours. This as such, is consistent with the emphasis of the entrepreneurship research traditions.

There exists a well-established recognition that entrepreneurial behaviour is firmly embedded in a given social and economic context, within which some individuals discover or stumble upon opportunities through their interactions with others (Aldrich, 1999; Davidsson, Delmar, & Wiklund, 2001a; Kirzner, 1997). Shane and Venkataraman pointed out that it is "…improbable that entrepreneurship can be explained solely by reference to a characteristic of certain people independent of the situations in which they find themselves" (Shane & Venkataraman, 2000). Similarly, (Phan, 2004) observed: "One cannot fully understand, for example, opportunity recognition as an emergence phenomenon, without being sensitive to its higher contexts – culture, institutional arrangements, and political-economic exigencies." Despite calls for multi-level analyses of entrepreneurship, such analyses have remained rare in the empirical literature (Busenitz et al., 2003; Davidsson et al., 2001a; Davidsson & Wiklund, 2001b).

Whereas a wealth of data exists on the effect of individual-level dispositions, the testing of contextual explanations has been constrained by lack of available data as well as well-known challenges arising from the difficulty of social identification (Manski, 1993) and data necessary to fully specify multi-level models of entrepreneurial behaviour (Kozlowski et al., 2000). In this paper we have begun to fill this void in the theoretical and empirical literature. Our study also answers the recent call for the increased application of multi-level approaches in management research.

In this study we applied a multi-level research design to address the question: Why do some individuals choose to seek growth with their entrepreneurial ventures, while others do not? In spite of extensive evidence pointing to the importance of high-growth firms for economic development (Acs et al., 2008; Henrekson & Johansson, 2008), the literature is virtually silent about the determinants of entrepreneurial growth aspirations in young firms. This is an important gap given the multitude of studies that point to the important role of entrepreneurial entry for job creation. In this study, we have focussed on how the norms and attitudes of an individual's social reference group moderate the propensity of individuals to pursue entrepreneurial growth. We could make a contribution in this paper by being able to control for selection into entrepreneurship by looking into instruments not only from the individual-level but also from the country-level. Hence, a multi-level selection model was successfully formulated and used in this paper. This approach opens opportunities to explore selection into a phenomenon at multi-levels.

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NOTES

1. The idea that people understand themselves through comparison with similar others is discussed on the reference group theory in sociology (Merton, 1957; Stouffer, 1962) and social comparison theory in psychology (Festinger, 1954).

2. The need for simplicity is further reinforced by the fact that GEM is implemented in dozens of different countries in all continents. To minimize bias caused by cultural interpretations, only dichotomous (yes/no) scales are used

3. Given the complexity of the analysis procedure, we also performed the same analysis using Stata's *gllamm* package. The maximum differences in coefficients produced by the two approaches (R's *lmer* and Statas *gllamm*) were less than 5%, suggesting no substantial loss of accuracy while using Laplacian approximation of *lmer* in R over adaptive quadrature approximation of *gllamm* in Stata

4. A limitation of the *lmer* function of R is that it does not yield the residuals of the multi-level probit equation. We therefore wrote new code for R so as to extract the standard normal probability distribution function (pdf) and cumulative probability distribution function (cdf) for the fitted model **[Xb]** of the ML probit and the ratio of the two (pdf/cdf). This ratio is the selection correction parameter commonly known as the Inverse Mill's Ratio.

REFERENCES

Ajzen, I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50: 179-211.

Aldrich, H. 1999. *Organizations Evolving*. London: Sage Publications.

Audretsch, D., Santarelli, E., & Vivarelli, M. 1999. Start-up size and industrial dynamics: some evidence from Italian manufacturing. *International Journal of Industrial Organization*, 17(7): 965-983.

Audretsch, D., & Vivarelli, M. 1995. New-firm formation in Italy: A first report. *Economics Letters*, 48(1): 77-81.

Bandura, A. 1977. *Social learning theory*. Englewood Cliffs, N.J.: Prentice Hall.

Bingham, C. B., Eisenhardt, K. M., & Furr, N. R. 2007. What makes a process a capability? Heuristics, strategy, and effective capture of opportunities. *Strategic Entrepreneurship Journal*, 1(1-2): 27-47.

Bliese, P. D. 2000. Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein, & S. W. J. Kozlowski (Eds.), *Multilevel Theory, Research, and Methods in Organizations: Foundations, Extensions, and New Directions*: 349-381. San Francisco: Jossey-Bass.

Bowen, H. P., & De Clercq, D. 2008. Institutional Context and the Allocation of Entrepreneurial Effort. *Journal of International Business Studies*, 29(1): 1-21.

Burnstein, E. 1963. Fear of failure, achievement motivation, and aspiring to prestigeful occupations. *Journal of Abnormal and Social Psychology*, 67(2): 189-193.

Busenitz, L. W., West, I., G. Page, Shepherd, D., Nelson, T., Chandler, G. N., & Zacharakis, A. 2003. Entrepreneurship Research in Emergence: Past Trends and Future Directions. *Journal of Management*, 29(3): 285-308.

Cohen, J. M. 1977. Sources of peer group homogeneity. *Sociology of Education*, 50: 227-241.

Colombo, M. G., & Grilli, L. 2005. Founders' human capital and the growth of new technology-based firms: A competence-based view. *Research Policy*, 34(6): 795.

Corbett, A. C. 2005. Experiential Learning Within the Process of Opportunity Identification and Exploitation. *Entrepreneurship: Theory & Practice*, 29(4): 473-491.

Cullen, J., & Gordon, R. 2007. Taxes and Entrepreneurial Risk-taking: Theory and Evidence for the US. *Journal of Public Economics*, 91(7-8): 1479-1505.

Davidsson, P. 1991. Continued entrepreneurship: Ability, need, and opportunity as determinants of small firm growth. *Journal of Business Venturing*, 6(6): 405-429.

Davidsson, P., Delmar, F., & Wiklund, J. (Eds.). 2001a. *Tillväxtföretagen i Sverige*. Stockholm: SNS Förlag.

Davidsson, P., & Wiklund, J. 2001b. Levels of analysis in entrepreneurship research: current practice and suggestions for the future. *Entrepreneurship Theory & Practice*, 25(4): 81-99.

DeTienne, D. R. 2009. Entrepreneurial exit as a critical component of the entrepreneurial process: Theoretical development. *Journal of Business Venturing*, In Press, Corrected Proof.

Dobrev, S. 2005. Career mobility and job flocking. *Social Science Research*, 34(4): 800-820.

Eckhardt, J., & Ciuchta, M. 2008. Selected variation: the population-level implications of multistage selection in entrepreneurship. *Strategic Entrepreneurship Journal*, 2(3): 209-224.

Evans, D. S., & Jovanovic, B. 1989. An Estimated Model of Entrepreneurial Choice Under Liquidity Constraints. *The Journal of Political Economy*, 97(4): 808-827.

Gentner, D., Loewenstein, J., & Thompson, L. 2003. Learning and transfer: A general role for analogical decoding. *Journal of Educational Psychology*, 95: 393-408.

Goodman, P., & Haisley, E. 2007. Social comparison processes in an organizational context: New directions. *Organizational Behavior and Human Decision Processes*, 102(1): 109-125.

Granovetter, M. 2005. The impact of social structure on economic outcomes. *Journal of Economic Perspectives*, 19(1): 33-50.

Hancock, J., & Teevan, R. 1964. Fear of failure and risk-taking behavior. *Journal of Personality*, 32(2): 200-209.

Hayward, M. L. A., Shepherd, D. A., & Griffin, D. 2006. A hubris theory of entrepreneurship. *Management Science*, 52(2): 160-172.

Hessels, J., Grilo, I., Thurik, R., & van der Zwan, P. 2009. Entrepreneurial exit and entrepreneurial engagement, *EIM Research Reports*: 20. Zoetermeer.

Hofmann, D., & Gavin, M. 1998. Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management*, 24(5): 623.

Hofmann, D. A. 1997. An overview of the logic and rationale of hierarchical linear models. *Journal of Management*, 23: 723-744.

Hofmann, D. A., & Griffin, M. A. 2000. The application of hierarchical linear modeling to organizational research. In K. J. Klein, & S. W. J. Kozlowski (Eds.), *Multilevel Theory, Research, and Methods in Organizations: Foundations, Extensions, and New Directions*: 467-511. San Francisco: Jossey-Bass.

Ibarra, H. 1997. Paving an alternative route: Gender differences in managerial networks. *Social Psychology Quarterly*, 60(11): *91*-102.

Ibarra, H., & Andrews, S. B. 1993. Power, Social Influence, and Sense Making: Effects of Network Centrality and Proximity on Employee Perceptions. *Administrative Science Quarterly*, 38(2): 277-303.

Kirzner, I. 1997. Entrepreneurial discovery and the competitive market process: An Austrian approach. *Journal of economic Literature*, 35(1): 60-85.

Kozlowski, S., & Klein, K. 2000. A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions*: 3–90.

Krueger, N. F., Reilly, M. D., & Carsrud, A. L. 2000. Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5-6): 411-432.

Kulik, C., & Ambrose, M. 1992. Personal and situational determinants of referent choice. *Academy of Management Review*, 17: 212-237.

Levie, J., & Autio, E. 2008. A theoretical grounding and test of the GEM model. *Small Business Economics*, 31(3): 235-263.

Lewis, K., Lange, D., & Gillis, L. 2005. Transactive memory systems, learning, and learning transfer. *Organization Science*, 16(6): 581-598.

Manski, C. F. 1993. Identification of Endogenous Social Effects: The Reflection Problem. *Review of Economic Studies*, 60: 531-542.

Martin, K. D., Cullen, J. B., & Johnson, J. L. 2007. Deciding to bribe: A cross-level analysis of firm and home country influences on bribery activity. *Academy of Management Journal*, 50(6): 1401-1422.

Nanda, R., & Sorensen, J. Peer effects and entrepreneurship.

Phan, P. 2004. Entrepreneurship theory: possibilities and future directions. *Journal of Business Venturing*, 19(5): 617-620.

Podolny, J. 2005. *Status signals: A sociological study of market competition*: Princeton Univ Pr.

Rabe-Hesketh, S., & Skrondal, A. 2005. *Multilevel and longitudinal modeling using Stata*. College Station, TX: Stata Press.

Raudenbush, S. W. 1988. Educational applications of hierarchical linear models: A review. *Journal of Educational Statistics*, 13: 85-116.

Rimal, B., Greenberg, A., & Rom, W. 2005. Basic pathogenetic mechanisms in silicosis: current understanding. *Current opinion in pulmonary medicine*, 11(2): 169.

Shane, S., & Venkataraman, S. 2000. The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1): 217-266.

Shepherd, D. A. 2003. Learning from Business Failure: Propositions of Grief Recovery for the Self-Employed. *The Academy of Management Review*, 28(2): 318-328.

Sørensen, J. B. 2007a. Bureaucracy and Entrepreneurship: Workplace Effects on Entrepreneurial Entry. *Administrative Science Quarterly*, 52: 387-412.

Sørensen, J. B. 2007b. Closure and Exposure: Assessing Alternative Mechanisms in the Intergenerational Inheritance of Self-employment, *Research in the Sociology of Organizations: The Sociology of Entrepreneurship*, Vol. 25: 12-12: JAI Press.

Sørensen, M. 2007c. How Smart Is Smart Money? A Two-Sided Matching Model of Venture Capital. *The Journal of Finance*, 62(6): 2725.

Starr, J. A., & Fondas, N. 1992. A model of entrepreneurial socialization and organization formation. *Entrepreneurship Theory & Practice*, 17(1): 67-76.

Ucbasaran, D., Wright, M., & Westhead, P. 2003. A longitudinal study of habitual entrepreneurs: starters and acquirers. *Entrepreneurship & Regional Development*, 15(3): 207.

Vaillant, Y., & Lafuente, E. 2007. Do different institutional frameworks condition the influence of local fear of failure and entrepreneurial examples over entrepreneurial activity? *Entrepreneurship and Regional Development*, 19: 313-337.

Wagner, J., & Sternberg, R. 2004. Start-up activities, individual characteristics, and the regional milieu: Lessons for entrepreneurship support policies from German micro data. *The Annals of Regional Science*, 38(2): 219-240.

Wennberg, K., Wiklund, J., DeTienne, D. R., & Cardon, M. S. 2009. Reconceptualizing entrepreneurial exit: Divergent exit routes and their drivers. *Journal of Business Venturing*, In Press, Corrected Proof.

Westhead, P., & Wright, M. 1998. Novice, portfolio, and serial founders: are they different? *Journal of Business Venturing*, 13(3): 173-204.

Zhao, H., Seibert, S., & Hills, G. 2005. The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, 90(6): 1265.

Table 1 Descriptive statistics

Level-1 Variable	N	Mean	Std. Dev.	Min	Max
Age	902 533	40.48	12.90	18	64
Gender	902 350	1.53	0.50	1	2
Education	856 071	2.21	1.06	0	4
Household income tier	690 699	1.90	0.80	1	3
Micro angel	901 039	0.03	0.18	0	1
Exit experience	807 242	0.03	0.17	0	1
Ties with entrepreneurs	709 473	0.40	0.49	0	1
Fear of failure	691 617	0.36	0.48	0	1
Self-Efficacy	667 270	0.49	0.50	0	1
Current jobs	70 069	4.94	91.60	0	8 500
Expected jobs in 5 years	70 069	9.34	64.62	0	5 000

Notes: N, Mean and SD Columns present population-weighted values
Min and Max Columns present un-weighted values

Level-2 Variable	N	Mean	Std. Dev.	Min	Max
OECD country	902 533	0.70	0.46	0	1
Ties with entrepreneurs (group average)	902 465	0.39	0.14	0	1
Fear of failure (group average)	902 459	0.36	0.10	0	1
Self efficacy (group average)	902 448	0.48	0.16	0	1

Notes: All Columns represent un-weighted values

Table 2 Correlation matrix

Individual-Level Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Age	1.00										
(2) Age (Squared)	-0.14	1.00									
(3) Gender	0.01	-0.05	1.00								
(4) Education	-0.01	-0.05	-0.03	1.00							
(5) Household Income tier	0.03	-0.06	-0.09	0.22	1.00						
(6) Current jobs	0.01	0.00	-0.01	0.01	0.02	1.00					
(7) Micro angel	-0.01	0.01	-0.04	0.05	0.08	0.01	1.00				
(8) Exit experience	-0.01	0.00	-0.02	-0.02	0.00	0.01	0.12	1.00			
(9) Ties with entrepreneurs	-0.09	0.00	-0.08	0.10	0.12	0.00	0.12	0.06	1.00		
(10) Fear of failure	0.00	-0.01	0.07	-0.05	-0.06	-0.01	0.00	0.02	-0.04	1.00	
(11) Self-efficacy	0.03	-0.05	-0.09	0.06	0.06	-0.01	0.02	0.03	0.10	-0.16	1.00

Panel Correlations
Based on 45 837 observations

Social Group-Level Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) OECD	1.00						
(2) Ties with entrepreneurs (group average)	-0.20	1.00					
(3) Fear of failure (group average)	0.09	-0.22	1.00				
(4) Self efficacy (group average)	-0.12	0.55	-0.27	1.00			
(5) Group Fear of Failure*Exit Experience	0.00	-0.01	0.01	-0.01	1.00		
(6) Group Ties with Entrepreneurs*Exit Experience	-0.02	0.02	-0.01	0.02	-0.33	1.00	
(7) Group Self Efficacy*Exit Experience	-0.02	0.02	-0.01	0.02	-0.36	0.63	1.00

Panel Correlations
Based on 807 141 observations

Table 3 Effects on individual-level entrepreneurial growth aspirations

	Individual-level Estimates with selection (λ)	Social Group-level Estimates with selection (λ)	Cross-level Moderation Estimates with selection (λ)
	(2)	**(3)**	**(4)**
Fixed Effects			
Controls			
Inverse Mills Ratio (λ)	28.49***	25.91***	25.59***
Age	-0.14***	-0.11*	-0.10*
Age (squared)	-0.01**	-0.01**	-0.01**
Gender	-7.26***	-6.93***	-6.84***
Education	1.87***	1.80***	1.78***
Household income tier	3.29***	3.03***	3.00***
Current jobs	0.10***	0.10***	0.10***
OECD country dummy	-8.56***	-8.24***	-8.26***
Micro angel dummy	10.81***	10.06***	9.92***
Individual Level (Level-1)			
Exit experience (H1a)	2.92*	2.91*	1.69
Ties with entrepreneurs (H1b)	8.83***	7.91***	7.84***
Fear of failure (H1c)	-6.92***	-6.21***	-6.15***
Self-Efficacy (H1d)	20.48***	19.10***	18.89***
Social Group-level (Level-2)			
Ties with entrepreneurs (group average) (H2a)		4.61+	4.18
Fear of failure (group average) (H2b)		-7.48*	-8.56*
Self efficacy (group average) (H2c)		-6.61*	-6.89*
Interaction Terms			
Group Fear of Failure*Exit experience (H3a)			26.27*
Group Ties with entrepreneurs*Exit experience			10.50
Group Self-efficacy*Exit experience			11.38
Random Effects			
Variance of Intercept	132(19)	128(19)	127(19)
Variance of overall residual	5395(38)	5398(38)	5397(38)
Model Fit Statistics			
Number of Observations	45792	45792	45792
Number of Groups	5718	5718	5718
Number of Predictors in the Model	13	16	19
Chi-Square	1183***	1192***	1198***
Log Likelihood	-262175	-262165	-262152
Deviance	524350	524330	524304
AIC	524381.6	524367.3	524348
LR Test: Chi Square (Significance)	-	20.36(p<0.0001)	25.26(p<0.00001)
Pseudo-R2 (McFadden)[1]	0.14	0.14	0.14

Notes: p<0.001***; p<0.01**; p<0.05*; p<0.10+
2-tailed significances (hypotheses 1-tailed): Non-standardized GLS coefficients

[1] McFadden's pseudo-R squared given by (1-log Likelihood of a model with predictors/Log Likelihood of the null model) is a surrogate representation of the R-square of a model. An R-square value could not be reported here because the models are *not* OLS regressions and also because the models yield log likelihood, which represents a density distribution rather than a model fit. McFadden's pseudo-R squared value was found to be 0.14 for models in Columns 1, 2, 3 and 4. The model fit statistics is appropriately represented by Deviance, AIC and BIC, when estimation algorithms yield log likelihood values. Pseudo-R squared is therefore not the most appropriate model fit statistics in such cases.