

## Accepted Manuscript

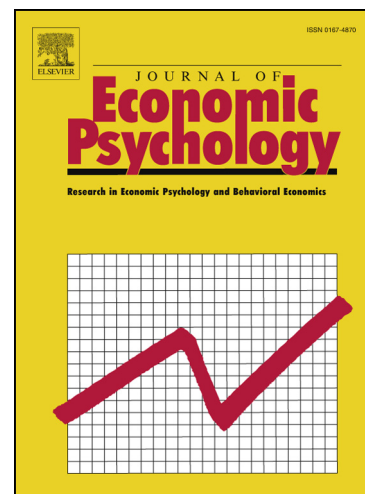
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PII: S0167-4870(15)00097-5  
DOI: <http://dx.doi.org/10.1016/j.joep.2015.07.004>  
Reference: JOEP 1843

To appear in: *Journal of Economic Psychology*

Received Date: 11 February 2015  
Revised Date: 4 June 2015  
Accepted Date: 24 July 2015



Please cite this article as: Kautonen, T., Hatak, I., Kibler, E., Wainwright, T., Emergence of entrepreneurial behaviour: The role of age-based self-image, *Journal of Economic Psychology* (2015), doi: <http://dx.doi.org/10.1016/j.joep.2015.07.004>

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**Emergence of entrepreneurial behaviour: the role of age-based self-image**

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## Emergence of entrepreneurial behaviour: the role of age-based self-image

### Abstract

This study introduces an individual's perception of their entrepreneurial potential in terms of their age (age-based self-image) to complement chronological age as a predictor of entrepreneurial behaviour. The principal hypothesis is that a positive age-based self-image enhances the likelihood of individuals turning their intention to start a business into actual behaviour. The empirical analysis based on data collected on the general adult population of Finland in 2011 and 2012 ( $n=672$ ) supports this hypothesis. The analysis further shows that this positive effect is independent of the individual's chronological age, and it is thus applicable to both age groups that are under-represented in entrepreneurship: 'youngsters' and 'seniors'. Promoting the development of a positive age-based self-image is a prospective policy option for fostering entrepreneurship among younger and older age groups. More in-depth research, especially concerning the antecedents of positive age-based self-image, is required for the effectiveness of such policy interventions.

*Keywords:* age; self-image; entrepreneurship; inclusiveness; entrepreneurial intentions; occupational choice

*JEL classification:* J13; J14; L26; M13

*PsycINFO classification:* 3040; 3610

## 1. Introduction

A recent report by the OECD/The European Commission (2014) calls for policies that allow European economies to capitalise on the entrepreneurial potential of individuals from all walks of life, with the dual aim of spurring economic growth and promoting social inclusion. Governments have often looked to stimulate entrepreneurial behaviour amongst particular social groups, such as ethnic minorities, lone parents, and the disabled (Edelman, Brush, Manolova, & Greene, 2010; Galloway, 2012; Kašperová & Kitching, 2014), to reduce unemployment and to unlock human capital for the benefit of society. Research on entrepreneurship has increasingly drawn attention to the barriers faced by different social groups, while policy-makers such as the OECD/The European Commission (2014) have recently argued that special attention needs to be directed to members of social groups that are ‘under-represented in entrepreneurship or face greater barriers to starting businesses than people from the mainstream’ (p.13). Notably, two of the groups addressed in the report are defined by age: ‘youngsters’ and ‘seniors’. Previously, policymakers had focused their efforts on promoting entrepreneurship to younger people (Ainsworth & Hardy, 2008; Mallett & Wapshott, 2014), and while there is growing recognition over the contributions of senior entrepreneurship in policy circles (OECD, 2012), questions remain over how much do we actually know about the effects of age on entrepreneurship?

Age is often merely a control variable in entrepreneurship research even though some studies have found it to be one of the most robust determinants of entrepreneurial behaviour (Parker, 2009). Only recently has age become the principal focus in a number of theoretical and empirical studies (Kulik, Ryan, Harper, & George, 2014). Previous studies analyse the effect of ageing on entrepreneurship predominantly from an economics perspective, focusing on the occupational choice between employment and self-employment at the micro level (Lévesque & Minniti, 2006; Kautonen, Down, & Minniti, 2014) or the influence of national

demographic profiles on aggregate levels of entrepreneurship at the macro level (Lévesque & Minniti, 2011; Lamotte & Colovic, 2013).

A common characteristic of these studies is the treatment of age as a chronological variable. However, research on subjective and cognitive age across a variety of contexts – such as life satisfaction (Westerhof & Barrett, 2005; Teuscher, 2009) and a broad range of consumer behaviours (Moschis & Mathur, 2006; Chang, 2008; Iyer, Reisenwitz, & Eastman, 2008) – indicates that chronological age by itself has limited predictive relevance, suggesting that alternative conceptualisations of age are required.

This present study differs from previous research on the role of age in entrepreneurship by acknowledging that individuals age differently (Montepare, 2009) and that ageing is not only a biological, but also a psychological process (Kooij, Lange, Jansen, & Dijkers, 2008; Settersten & Mayer, 2007). For this purpose, we draw upon the self-representation literature (e.g., Markus & Wurf, 1987; Mitchell & Shepherd, 2010) and socio-emotional selectivity theory (Carstensen, 1991) to develop the concept of age-based self-image, which captures an individual's perception of their entrepreneurial potential in terms of their age. This concept not only links images of entrepreneurship with images of self, but also accounts for individuals' time horizon perceptions (Cate & John, 2007). Age-based self-image therefore captures more than just behavioural control perceptions.

We apply the concept of age-based self-image as an extension of the theory of planned behaviour (Ajzen, 1991; 2011/2015). More specifically, we propose that age-based self-image moderates the process of transforming an intention to start a business into actual entrepreneurial behaviour. We argue that if an individual has a positive perception of their entrepreneurial potential in terms of their age, they are more likely to turn their initial entrepreneurial intention into subsequent behaviour. We test this proposition using longitudinal data from a survey of 672 Finnish adults who reported on their entrepreneurial

intention and age-based self-image in 2011, and participated in a follow-up study concerning entrepreneurial behaviour in 2012.

This article makes two scholarly contributions. First, it adds to our understanding of ageing as a psychological process in economic contexts, by introducing age-based self-image to complement chronological age as a predictor of entrepreneurial behaviour. Second, the study extends the theory of planned behaviour by adding a psychological age perspective to our understanding of the factors that influence whether and how intentions lead to subsequent actions. Hence, we also respond to the call for longitudinal designs in entrepreneurship research concerning the relationships between personality traits, cognition and performance (Rauch & Frese, 2007).

The principal policy implication concerns the inclusion of under-represented age groups in entrepreneurship. By showing that the psychological aspects of ageing matter, this study suggests that enhancing an individual's age-based image of entrepreneurial self, through the promotion of entrepreneurship as a feasible and socially acceptable career alternative for individuals of all ages, could help motivate both youngsters and seniors to realise their entrepreneurial intentions.

## **2. Theoretical Background**

### *2.1. Ageing and entrepreneurship*

Prior research shows that the effect of ageing on entrepreneurship resembles an inverse U-shaped curve: the probability of starting a business increases until the entrepreneurially most active age range of 35-44 years, after which it declines with each additional year (Lévesque & Minniti, 2006; Parker, 2009). The upward sloping curve for younger individuals can be explained by the perceived feasibility of entrepreneurship (or perceived behavioural control in terms of the theory of planned behaviour; Krueger, Reilly, & Carsrud, 2000), which

has been shown to drive the choice of starting a business (Kautonen, van Gelderen, & Fink, 2015). As younger adults accumulate human, social and financial capital through work experience and education, their perceived ability to behave entrepreneurially becomes stronger (Clarysse, Tartari, & Salter, 2011; Mayer-Haug, Read, Brinckmann, Dew, & Grichnik, 2013). More specifically, the individual's situational perception of competence increases through hands-on experience, vicarious learning, and physiological/emotional arousal that come with additional years of age (Bandura, 1986; Krueger, Reilly, & Carsrud, 2000).

In contrast, the reason for the downward sloping curve for individuals aged approximately 45 and above is less likely to result from a lack of feasibility perceptions. Previous studies indicate that, all else being equal, entrepreneurship should be more feasible for older individuals as they are more likely to have the experience and resources needed for engaging in start-up behaviour compared to their younger counterparts (van Praag & van Ophem, 1995; Singh & DeNoble, 2003). The age-related decline in the level of entrepreneurial behaviour should therefore mainly be a function of perceived desirability, which is related to the opportunity costs of entrepreneurship vis-à-vis waged employment. These opportunity costs increase in two ways as individuals become older: First, typical workers reach their peak income level between the ages 45 and 54 (Census, 2013; Short, 2013), which provides a financial disincentive for switching to entrepreneurship. Second, time is a scarcer resource for older individuals as they have an incentive to prefer income from waged employment that is steady and realized in the present, compared to entrepreneurship which generates an uncertain level of income in the future (Lévesque & Minniti, 2006) or in the worst case scenario, venture failure and limited time to acquire new resources (Wainwright & Kibler, 2014). For these reasons, starting a business is less desirable for older than younger individuals.

Previous research indicates a limited predictive relevance of chronological age by itself (Settersten & Mayer, 1997; Montepare, 2009). Subsequently, in this paper, we acknowledge that the age conceptualisation relevant for entrepreneurship may not be a chronological one, but a subjective, age-related perception. Before discussing the concept of age-based self-image accorded to entrepreneurship, the next section briefly defines the entrepreneurial intention-action relationship, which is used to model the emergence of entrepreneurial behaviour in this study.

## 2.2. *The entrepreneurial intention-behaviour relationship*

This study follows the theory of planned behaviour (TPB; Ajzen, 1991), an extension of Ajzen and Fishbein's (1980) theory of reasoned action, in defining intention as 'a person's readiness to perform a given behavior' (Ajzen, 2011/2015) and assuming a positive relationship between entrepreneurial intention and subsequent start-up behaviour. Thus, the higher the individual's level of intention to engage in entrepreneurial behaviour, the more likely it is that they will actually commence start-up activities. However, from previous research we also know that intentions do not always lead to behaviour. For example, Sheeran's (2002) meta-analysis of meta-analyses shows that intention explains only 28% of the variance in a diverse range of human behaviours. The few entrepreneurship studies that include the intention-action relationship show similar prediction rates (Goethner, Obschonka, Silbereisen, & Cantner, 2012; Kautonen et al., 2014).

What we thus far know very little about is what influences the translation of intentions to actions in the entrepreneurial context. Although there is a substantial stream of research on the formation of entrepreneurial intentions (see Schlaegel & Koenig, 2014 for a recent meta-analysis), very few of these studies include the intention-action relationship. The present study contributes to closing this gap by focusing on the mechanisms that influence taking



action upon entrepreneurial intentions. Psychologists have suggested various extensions to the theory of planned behaviour to improve its predictive relevance (Conner & Armitage, 1998). Among these extensions are studies that examine factors that might moderate the intention-behaviour relationship (e.g., Conner & McMillan, 1999; Godin, Conner, & Sheeran, 2005).

The present research adds to this stream by explaining how an individual's perception of their entrepreneurial potential in terms of their age (age-based self-image) affects the intention-behaviour relationship in the context of new venture creation. Although entrepreneurial potential is to an extent captured by individual control perceptions (perceived behavioural control), which are independent of external factors in the theory of planned behaviour, the concept of age-based self-image contextualises the individual's perception of their entrepreneurial potential in terms of their age and adds the hitherto unexplored dimension of time perspectives (Cate & John, 2007) to the model. Given that 'a theoretical description of the role of additional variables within the TPB is required if a theoretically coherent model is to result' (Conner & Armitage, 1998, p. 1433), we draw upon socio-emotional selectivity theory and self-representation literature for conceptualising the construct of age-based self-image and adding it to the theory of planned behaviour.

### 2.3. *Age-based self-image*

Entrepreneurial behaviour occurs at the nexus of the enterprising individual and the entrepreneurial opportunity (Shane & Venkataraman, 2000; Douglas & Fitzsimmons, 2013). Because both the individuals and the opportunities are heterogeneous (e.g., Rauch & Frese, 2007; Samuelsson & Davidsson, 2009), individuals can recognize entrepreneurial opportunities, but they do not necessarily recognize them as opportunities that they themselves can or should pursue. McMullen & Shepherd (2006) coined the term 'potential opportunities for anyone' versus 'potential opportunities for a specific individual', which

highlight the distinction between third and first-person entrepreneurial opportunities (Mitchell & Shepherd, 2010), respectively. This distinction in turn points to the importance of examining images of entrepreneurship in conjunction with images of self (Mitchell & Shepherd, 2010).

Morgan and Schwalbe (1990, p.154) define self-image as ‘the total set of beliefs and attitudes toward the self as an object of reflection’. These multifaceted beliefs can be positive or negative, actual or ideal, in the present, past and/or in the future (Markus & Wurf, 1987). The literature is not always clear as to the distinction between self-image and identity (Burke, 1980). In this study, we follow Turner (1968) and Burke (1980) to distinguish between these concepts, and to inform our choice of self-image as the focal construct. Self-images can be seen as the current working copy of the identity and as such they are subject to constant change, revision, editing and updating as a function of variations in situation, and situational demands (Burke, 1980). In turn, identities are comparatively stable and rather unaffected by moment-to-moment interaction and situational demands (Turner, 1968). According to Burke (1980, p. 21): ‘It is the image, not the identity, which does the work in guiding moment-to-moment interaction’. The image has the flexibility to serve as a map for behaviour, with behaviour constituting the externalisation of the image ‘in the sense that the meanings of the behaviors [...] are the meanings of the self contained in the image’ (Burke, 1980, p. 21).

Prior entrepreneurship research suggests that these ‘prototypes of the self’ (Mitchell & Shepherd, 2010, p.142) are key drivers of entrepreneurial behaviour (McMullen & Shepherd, 2006; Wood, McKelvie, & Haynie, 2014). Whereas Farmer, Yao, and Kung-Mcintyre (2011) found strong links between the belief toward the self as an entrepreneur and start-up behaviour, Mitchell and Shepherd (2010) showed that different images of the self, namely images of vulnerability and images of capability, affect the intention to act on an entrepreneurial opportunity.

The present study follows Markus and Nurius (1986) and Mitchell and Shepherd (2010) by focusing on one element of the self that is based on an individual's potential to perform a particular behaviour. Specifically, we introduce age-based self-image as an alternative conceptualisation of age to complement chronological age as a determinant of entrepreneurial behaviour. We define the concept as the individual's image of their entrepreneurial potential in terms of their age. Following socio-emotional selectivity theory (Carstensen, 1991), we propose that an individual's age-based self-image accorded to entrepreneurship moderates the entrepreneurial intention-behaviour relationship.

According to socio-emotional selectivity theory, individuals who imagine themselves as having plenty of opportunities in the years ahead and plenty of time to pursue them (positive age-based self-image) tend to prioritise knowledge-acquisition goals (Carstensen, 1992). Knowledge acquisition encompasses behaviours aimed at learning about new or changing elements in the individual's environment, as well as analysing and incorporating that knowledge into career advancement activities (Ng & Feldman, 2010). Previous research suggests that the greater the amount of acquired knowledge, the more likely it is that the individual recognises entrepreneurial opportunities as first-person opportunities, that is, ones that they themselves can or should act upon (Wood et al., 2014).

A positive age-based self-image accorded to entrepreneurship therefore reflects a positive evaluation of the individual's entrepreneurial self and the opportunity context, which we argue is conducive to the conversion of entrepreneurial intentions into behaviour. More specifically, once an individual's intention to engage in entrepreneurial behaviour is developed, a positive age-based image of entrepreneurial self – that induces the individual to engage in knowledge-acquisition activities – makes them more likely to be certain in successfully exploiting opportunities, and particularly to avoid pursuing start-up opportunities that lack promise and realise the ones that hold promise (Dimov, 2010; Mitchell & Shepherd, 2010). The individuals

who identify their room for manoeuvre as wide enough for entrepreneurship are also more likely to develop stronger ambitions and capability beliefs (Westerhof & Barrett, 2005; Teuscher, 2009) that become manifested in entrepreneurial behaviour.

In contrast, individuals who believe time is running out and imagine themselves as having more limitations on their future options (negative age-based self-image) tend to prioritise emotion-regulation goals (Carstensen, 1992; Carstensen, Isaacowitz, & Charles, 1999). Emotional regulation includes behaviours aimed at establishing intimacy with others and developing a sense of belonging in the social environment (Ng & Feldman, 2010). Thus, when time is perceived as limited, individuals strive for having more positive emotional experiences resulting from stable social relationships and fewer negative emotional experiences (Gross, Carstensen, Tsai, Skorpen, & Hsu, 1997). However, entrepreneurship is often associated with high levels of risk taking, uncertainty over income and continuity of work, a high level of work effort, and a considerable degree of autonomy and responsibility (Patzelt & Shepherd, 2011). These give rise to negative emotions such as fear, anxiety, loneliness, and mental strain (Hannafey, 2003; Shepherd, 2003). Hence, individuals with a negative age-based image of their entrepreneurial self receive more immediate gratification from engaging in social activities than they do from engaging in the knowledge-acquisition activities (Carstensen et al., 1999) required for pursuing entrepreneurial opportunities.

This argument suggests that an individual with a positive age-based entrepreneurial self-image is more likely to act upon an initial intention to engage in business start-up behaviour than a person with a negative age-based self-image. Subsequently, we propose that an individual's age-based self-image of entrepreneurship moderates the intention-behaviour relationship, making the effect of intention on behaviour stronger when the level of age-based self-image is high. Conversely, the effect of intention on behaviour is weaker when the level of age-based self-image is low.

### 3. Data

#### 3.1. Data collection

Data were collected in two waves in April 2011 and May 2012 by means of a postal survey targeting the Finnish adult population aged 20-64 years. The first wave targeted 10,000 randomly selected individuals in a representative range of regions including 14 urban, 12 semi-urban and 12 rural municipalities (response rate: 23 percent). We examined the sample for potential non-response bias by means of archival and wave analysis (Rogelberg & Stanton, 2007). These analyses did not indicate significant age-based or regional bias between early and late return mailings, or when comparing the age and regional distributions between the sample and the population. Moreover, *t*-tests did not reveal significant differences in the mean level of entrepreneurial intention between early and late respondents.

In order to analyse whether entrepreneurial intention leads to subsequent start-up behaviour, we collected a second wave of data 12 months after the first wave. The second wave focused on those first-wave participants who were not already entrepreneurs or in the process of starting a business, and who did not have excessive missing values in the explanatory variables. The second-wave questionnaire was sent to those 1,002 respondents who met the aforementioned criteria and who had given their permission to be contacted again (548 eligible individuals opted out of the second wave). The response rate in the second wave was 70 percent. After discarding incomplete responses, the final dataset achieved comprised of data on 672 individuals from 2011 and 2012. We compared the means of the principal explanatory variables, entrepreneurial intention and age-based self-image, between the final sample of 672 respondents and those 878 individuals who participated in the first wave, but either did not respond in, or opted out of the second wave. The *t*-test did not reject the null hypothesis of equal means in either case.

### 3.2. *Dependent and independent variables*

The operationalisation of *entrepreneurial intention* (measured in the first wave) and subsequent *start-up behaviour* (measured in the second wave) was guided by Ajzen (2011/2015). Both constructs were measured with multi-item scales, with the item formulations consistently referring to the same behaviour and the same time frame (Table 1).

Since the extant literature does not feature a suitable measurement instrument for *age-based self-image* in the business start-up context, we developed a set of four items based on the literature reviewed above and included them in the first-wave questionnaire. These items also refer to the same behaviour and time frame as the intention and behaviour items (Table 1).

### 3.3. *Control variables*

The subsequent regression analysis includes a number of control variables (all measured in the first wave). The individual's *chronological age* (in years) is included in a quadratic specification to account for the potential curvilinear effect of age on entrepreneurial behaviour (Lévesque & Minniti, 2006; Parker, 2009).

In addition to chronological age, our regression models include the respondent's *subjective age* (self-reported felt age in years) (Barak & Schiffman, 1981; Teuscher, 2009). Although this variable is related to age-based self-image, there is an important difference, too. An individual's age-based self-image accorded to entrepreneurship relates specifically to how they perceive their entrepreneurial potential in terms of their age, whereas subjective age is a more general assessment of how young or old an individual feels they are. The rationale behind this distinction is that an individual's perception of their age in terms of entrepreneurship must not be related to their general subjective age. Different social

expectations govern different activities, so even if a person felt younger than their actual age, they might still feel that their age is inappropriate for starting a business. The main purpose of including subjective age as a control variable is to examine the independence of age-based entrepreneurial self-image from subjective age as a generic measure of perceived age. Subjective age is included as a proportional discrepancy measure, defined as the difference between the respondent's chronological age and subjective age divided by chronological age (Rubin & Berntsen, 2006). Therefore, the higher the value of the subjective age variable, the younger the individual feels him or herself to be compared to their chronological age.

Prior studies consistently point at gender differences in entrepreneurial contexts (Ayala & Manzano, 2014), showing in particular that women are less likely than men to start a business, and associate having previous experience in starting and running businesses with a stronger entrepreneurial intention (Parker, 2009; Verheul, Thurik, Grilo, & van der Zwan, 2012). Furthermore, Verheul, Uhlaner, and Thurik (2005) have shown that gender and entrepreneurial experience impact on the entrepreneurial self-image. For these reasons, the regression models include dummies for the respondent's *sex* (1=female) and their *prior entrepreneurial experience* (1=has started one or more businesses in the past, but was not an entrepreneur in the first survey wave).

The analysis also includes dummies for whether the respondent had a *higher education* degree and whether they were *employed* (=1) or *unemployed/outside the labour force* at the first wave in 2011 (=0). Although mixed evidence exists on the influence of education, research suggests that higher education tends to help individuals to explore and exploit entrepreneurial opportunities (Mayer-Haug et al., 2013), thus serving as an important driver of entrepreneurial behaviour (Davidsson & Honig, 2003). The literature further suggests that the situation of being unemployed, and the perception of limited employment prospects, can force individuals to become entrepreneurs, whereas the situation of being employed on a full-

time basis can increase an individual's perceived risk and opportunity costs of starting a business (Evans & Leighton, 1990; Blanchflower, 2000).

Another control measure is the individual's perception of their health, which prior studies associate with subjective perceptions of age, especially among older adults (Hubley & Hultsch, 1994; Teuscher, 2009). *Perceived health* is included as a dummy where the value 1 indicates that the individual is (very) dissatisfied with their current health. *Perceived behavioural control*, or the perceived ease or difficulty of engaging in business start-up behaviour, is included because the theory of planned behaviour conceptualises it as a predictor of behaviour in addition to intention (Ajzen, 1991). The operationalisation of perceived behavioural control follows the same guidelines as the intention, behaviour and age-based self-image measures (Table 1).

#### 3.4. *Confirmatory factor analysis*

We factor-analysed the multi-item measurement scales before computing index scores (summated average scores of the respective items) for the subsequent regression analysis. Our confirmatory factor analysis (CFA; Table 1) suggests a good fit between the model and the data (Hu & Bentler, 1999). The comparative fit index (CFI) is .988 (recommended threshold  $> .95$ ); the root mean square error (RMSEA) is .039 (recommended threshold  $< .06$ ); and the standardized root mean squared residual (SRMR) is .036 (recommended threshold  $< .08$ ).

We tested the model's discriminant validity by comparing it with alternative specifications, such as the items measuring age-based self-image loading on the same factor as the items measuring intention (CFI=.766; RMSEA=.169; SRMR=.144) or perceived behavioural control (CFI=.848; RMSEA=.136; SRMR=.116). We tested all possible combinations and found that the model where all items load on their intended factors fits to the data significantly better than any alternative model. The chi-squared difference values



ranged from 807 to 1353 with 3 degrees of freedom (models where any two of intention, perceived behavioural control and age-based self-image load on one factor) and 2070 with five degrees of freedom (model where intention, perceived behavioural control and age-based self-image all load on one factor), each significant at the  $p < .001$  level, confirming that the factor structure presented in Table 1 has the best fit with the data.

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Table 1 about here  
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### 3.5. *Descriptive statistics*

Table 2 presents the means, standard deviations and Pearson correlation coefficients for all variables included in the regression analysis. In addition to the simple means of entrepreneurial intention and behaviour, it is useful to note that 41 percent of the respondents reported a non-zero level of intention to engage in start-up activities within the next 12 months. Nineteen percent of the whole sample had become engaged in some level of start-up behaviour in the 12-month follow-up period. If we only consider those with a non-zero level of entrepreneurial intention in the first wave, 37 percent of these individuals had taken some entrepreneurial action by the second wave. Unsurprisingly, there is a clear intention-action gap in our data.

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Table 2 about here  
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## 4. Results

### 4.1. *Does age-based self-image moderate the intention-behaviour relationship?*

We employed ordinary-least-squares (OLS) regressions to test whether age-based self-image accorded to entrepreneurship moderates the entrepreneurial intention-behaviour

relationship. In order to facilitate interpretation, all continuous variables were mean-centred.

The following equation summarises the principal model:

$$behaviour_i = \alpha + \beta_1 intention_i + \beta_2 image_i + \beta_3 intention_i * image_i + \beta_c C_i + \varepsilon. \quad (1)$$

We thus regressed entrepreneurial behaviour 2011-2012 (*behaviour<sub>i</sub>*, where  $i = 1, \dots, n$ ) on the intention to start a business in 2011 (*intention<sub>i</sub>*), age-based entrepreneurial self-image (*image<sub>i</sub>*), their interaction, and a vector of control variables  $C_i$ . The residual error is denoted by  $\varepsilon$ ,  $\alpha$  stands for the intercept and  $\beta$  are the regression coefficients. Table 3 displays the coefficient estimates and  $t$ -statistics. Model 1 presents the baseline model that includes only the control variables. In Models 2, 3, 4 and 5 intention, age-based self-image and the interaction term are added to the equation sequentially. As expected, intention has a significant positive association with subsequent behaviour. Age-based self-image accorded to entrepreneurship exerts a significant and positive direct effect on behaviour when intention is not in the model (Model 2), but the significance of the effect disappears when intention is added to the equation (Model 4). However, the positive and statistically significant interaction term in Model 5 suggests that age-based self-image moderates the entrepreneurial intention-behaviour relationship, as proposed above. In order to examine the independence of the effect of age-based self-image from the related construct of perceived behavioural control, we also estimated a model where these two variables interact (not reported in Table 3) and found that the interaction term is not significant. Hence, we proceed to interpret the interaction between entrepreneurial intention and age-based self-image.

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Table 3 about here  
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A significant interaction term by itself provides only limited support to a conditional hypothesis, such as the moderation effect proposed here. In the present case, the significant interaction term can only be interpreted as evidence for the effect of intention on behaviour

significantly depending on the level of age-based self-image, and vice versa. For testing a conditional hypothesis, we need to know the magnitude and significance of the effect of intention on behaviour at different levels of age-based self-image (Brambor, Clark, & Golder, 2006). For this purpose, we computed the marginal effect (simple slope) of intention when age-based self-image is set at one standard deviation unit above and below its mean (Aiken and West, 1991). Deriving from Eq. (1), the marginal effect is defined as  $\partial \text{behaviour} / \partial \text{intention} = \beta_1 + \beta_5 \text{image}_i$ . As Figure 1 demonstrates, the effect of intention on behaviour is significantly stronger when the individual has a high (+1 SD; positive age-based self-image) compared to a low (-1 SD; negative age-based self-image) level of age-based self-image. Therefore, we can conclude that age-based self-image accorded to entrepreneurship moderates the relationship between entrepreneurial intention and subsequent behaviour.

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Figure 1 about here  
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#### 4.2. Sensitivity analysis

We inspected the regression model (Model 4 in Table 3) for influential observations and multicollinearity. The highest Cook's distance score in the model was .19, which is clearly below the informal guideline value of 1 for influential observations. Thus, the model estimates do not seem to be sensitive to the inclusion of any particular respondent. Based on a number of tests, multicollinearity is not a serious concern in our analysis. First, the variance inflation factor (VIF) scores are moderate, ranging from 1.07 to 2.11 with a mean of 1.41. Second, the correlations between the coefficients are modest: with one exception the correlation coefficients are less than .50 and this one exception pertains to a correlation between the interaction term and one of its constituent terms. Third, the score for the condition number test of 8.13 is clearly below the informal rule of thumb of 15.

We also examined the sensitivity of the moderating effect of age-based self-image on the intention-behaviour relationship to chronological age. Based on prior research, it would be plausible to argue that the effect of age-based self-image is not independent of the person's chronological age. Age-based self-image is linked to cultural and factual markers of age as a chronological category (Nikander, 2009), which can constrain the individual's image of their entrepreneurial potential in terms of their age. Previous studies suggest that the cultural markers of age in the entrepreneurial context, as depicted in popular media, tend to picture the entrepreneur as a risk-taking 'superman' in their 30s (Anderson & Warren, 2011), representing a young enterprising culture that socially excludes mature individuals (Ainsworth & Hardy, 2008). Subsequently, age-based self-image arguably weighs more in the translation of entrepreneurial intentions into subsequent behaviour for older individuals. We tested this proposition by adding the required product terms for an interaction between intention, age-based self-image and chronological age to the baseline model (Model 5 in Table 3). According to the  $F$ -test of change in model fit, the added interaction does not improve the model ( $F_{6, 653} = .75$ , n.s.). Therefore, the moderating effect of age-based self-image accorded to entrepreneurship on the entrepreneurial intention-behaviour relationship is not significantly dependent on chronological age.

## 5. Conclusions

Our analysis demonstrated that an individual's age-based self-image accorded to entrepreneurship moderates the entrepreneurial intention-behaviour relationship: if an individual perceives their entrepreneurial potential positively in terms of their age, they are more likely to turn their start-up intention into subsequent behaviour. The analysis further showed that the moderating effect of age-based self-image is independent of the individual's chronological age. At a general level we therefore interpret this result as

suggesting that differences in individuals' images of their entrepreneurial self shape the emergence of their entrepreneurial behaviour.

By introducing an age concept that goes beyond chronological age, our study extends the entrepreneurial intention-action literature in understanding the factors contributing to the development of entrepreneurial behaviour (Schlaegel & Koenig, 2014). More generally, it also extends the theory of planned behaviour by adding an age perspective to our understanding of the intention-behaviour relationship. Furthermore, our research introduces socio-emotional selectivity theory into the study of entrepreneurship and as a complement to the theory of planned behaviour in explaining the emergence of (entrepreneurial) behaviour. Although the usefulness of socio-emotional selectivity theory in researching organisational behaviour has been demonstrated in prior research (see e.g., Ng & Feldman, 2010; Krumm, Grube, & Hertel, 2013), the socio-emotional motives underlying entrepreneurial opportunity exploitation are still relatively unknown. Our findings indicate that the entrepreneurial intention-behaviour link is dependent on the positive age-based image of entrepreneurial self in that it causes the individual to receive more immediate gratification from engaging in the knowledge-acquisition activities that are required for exploiting entrepreneurial opportunities. Our findings also support the idea from the self-representation literature by which images of the self affect decisions to act on an entrepreneurial opportunity (Mitchell & Shepherd, 2010), and extend this stream of research by adding an age perspective.

The main policy implication of these findings is that if the policy makers aim to increase the number of start-ups by young and mature people, enhancing their age-based image of an entrepreneurial self, for example, through the promotion of entrepreneurship as a positive career alternative for people of these age groups would seem appropriate. Previous research has indicated how different entrepreneurial groups experience different barriers to developing an enterprise, particularly individuals of a younger or senior age. Subsequently,

policy understandings of how age-based self-images affect opportunity exploitation, can be used to assist policy-makers in tailoring advice, interventions and support to assist these two groups.

This research is not without limitations. The first, and perhaps most important limitation is that our analysis does not include the formation mechanisms of age-based self-image. Therefore, a particularly important avenue for future studies is developing an understanding of the antecedents of age-based self-image accorded to entrepreneurship – to what extent is it the product of individual (e.g., personality, career history), social (e.g., family and friends) and institutional (e.g., image of entrepreneurs portrayed in the media) factors? Without such a fine-grained understanding, it is difficult to determine the most effective course of action for policy to promote the development of positive age-based self-image. Would it be best to create initiatives that aim to change the societal images of entrepreneurs to be more inclusive of all ages? Or would it be more effective, especially in the short term, to advise enterprise support initiatives aimed at young or mature people to develop strategies to help prospective entrepreneurs deal with age-related issues, such as explicit or implicit ageism, in their immediate social surroundings?

The second limitation is the focus of the empirical analysis on one country. It is easy to imagine age-based self-image being prone to cultural influences, such as how the potential of individuals of different ages is generally perceived in society. For this reason, cross-cultural research would be useful in determining the generalisability of our findings and their implications for supra-national policy work for example at the OECD/EU level.

The third limitation concerns the construct of age-based self-image. In the present study, it accounts for individuals' time horizon perception (Ng & Feldman, 2010), operationalised as their perceived age. Under the framework of socio-emotional selectivity theory, time horizon perception has so far (including the present study) been conceptualised

as a single construct, indicating a bipolar continuum from expansive (the perception that there is plenty of time to pursue opportunities) to limited (the perception that time is running out; Fung, Lai, & Ng, 2001; Lang & Carstensen, 2002). However, it has been suggested that the treatment of time horizon perception as bipolar masks the possibility that individuals may perceive time as more multidimensional and fluid (Abi-Hashem, 2000; Cate & John, 2007). Thus, future research should consider a more multifaceted conceptualisation of age-related time horizon perception.

Fourth, because our data comprises cognitive, self-reported measures, common method bias could be a limitation (Harrison, McLoughlin, & Coalter, 1996). In order to counter this potential bias, our data collection strategy included measures such as ensuring the anonymity of the respondents and counterbalancing the question order in both surveys (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Furthermore, even though all of our data for a given observation comes from the same informant, the data for the dependent and the independent variables were collected at different points in time one year apart. We are confident that these measures reduce the risk of common method bias unduly influencing the results of our study.

### **Acknowledgements**

This research has received financial support from the Academy of Finland (grant numbers 135696 and 140973).

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**Table 1** Confirmatory factor analysis

<b>Factors and indicators</b> (all measured on a 6-point rating scale)	<b>Loadings</b>
<i>Start-up behaviour</i> (‘Please assess’)	
How much effort have you given to activities aimed at starting a business in the last 12 months?	.95***
How much time have you used in activities aimed at starting a business in the last 12 months?	.96***
How much money have you invested into activities aimed at starting a business in the last 12 months?	.58***
<i>Age-based self-image</i> (‘How do you perceive your age in terms of entrepreneurship?’)	
If I wanted to take steps to start a business in the next 12 months, my age would not be a hindrance for me.	.79***
In my opinion I am at the best age right now to take steps to start a business in the next 12 months.	.87***
If I took steps to start a business in the next 12 months, my age would provide me with a significant advantage.	.73***
Most people important to me think that a person of my age can very well take steps to start a business in the next 12 months.	.84***
<i>Entrepreneurial intention</i> (‘How well do the following statements describe you?’)	
I plan to take steps to start a business in the next 12 months.	.85***
I intend to take steps to start a business in the next 12 months.	.93***
I will try to take steps to start a business in the next 12 months.	.93***
<i>Perceived behavioural control</i> (‘Please assess yourself with the following statements.’)	
If I wanted to, I could take steps to start a business in the next 12 months.	.74***
If I took steps to start a business in the next 12 months, I would be able to control the progress of the process very much myself.	.80***
It would be easy for me to take steps to start a business in the next 12 months.	.82***
If I wanted to take steps to start a business in the next 12 months, no external factor, independent of myself, would hinder me in taking such action.	.61***
<i>Fit indices</i>	
Chi-squared with 71 degree of freedom	145.04
Comparative fit index (CFI)	.988
Root mean squared error of approximation (RMSEA)	.039
Standardised root mean squared residual (SRMR)	.036

Note: \*\*\*  $p < 0.001$ . All indicators are set to load on their intended factor.



**Table 2** Descriptive statistics

	$\alpha$	Min	Max	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Start-up behaviour	.85	1	5.67	1.20	.53	1									
2. Entrepreneurial intention	.93	1	6	1.64	1.06	.51*	1								
3. Age-based self-image	.88	1	6	4.03	1.36	.20*	.27*	1							
4. Chronological age		20	64	44.03	12.55	-.06	-.04	-.35*	1						
5. Subjective age		-.50	.44	.08	.12	.08*	.10*	.12*	.19*	1					
6. Perceived behavioural control	.83	1	6	3.17	1.30	.29*	.42*	.39*	-.01	.07	1				
7. Female		0	1	.63		-.08*	-.19*	.02	-.11*	.05	-.18*	1			
8. Entrepreneurial experience		0	1	.14		.19*	.15*	.04	.19*	.05	.26*	-.09*	1		
9. Perceived health		0	1	.20	3.23	.05	.04	-.07	.09*	-.13*	-.00	-.09*	.06	1	
10. Employed in 2011		0	1	.73		.01	.02	.07	.16*	.07	.08*	-.02	.03	-.11*	1
11. Higher education		0	1	.36		-.02	-.02	.14*	-.21*	-.04	.05	-.02	-.04	-.11*	.05

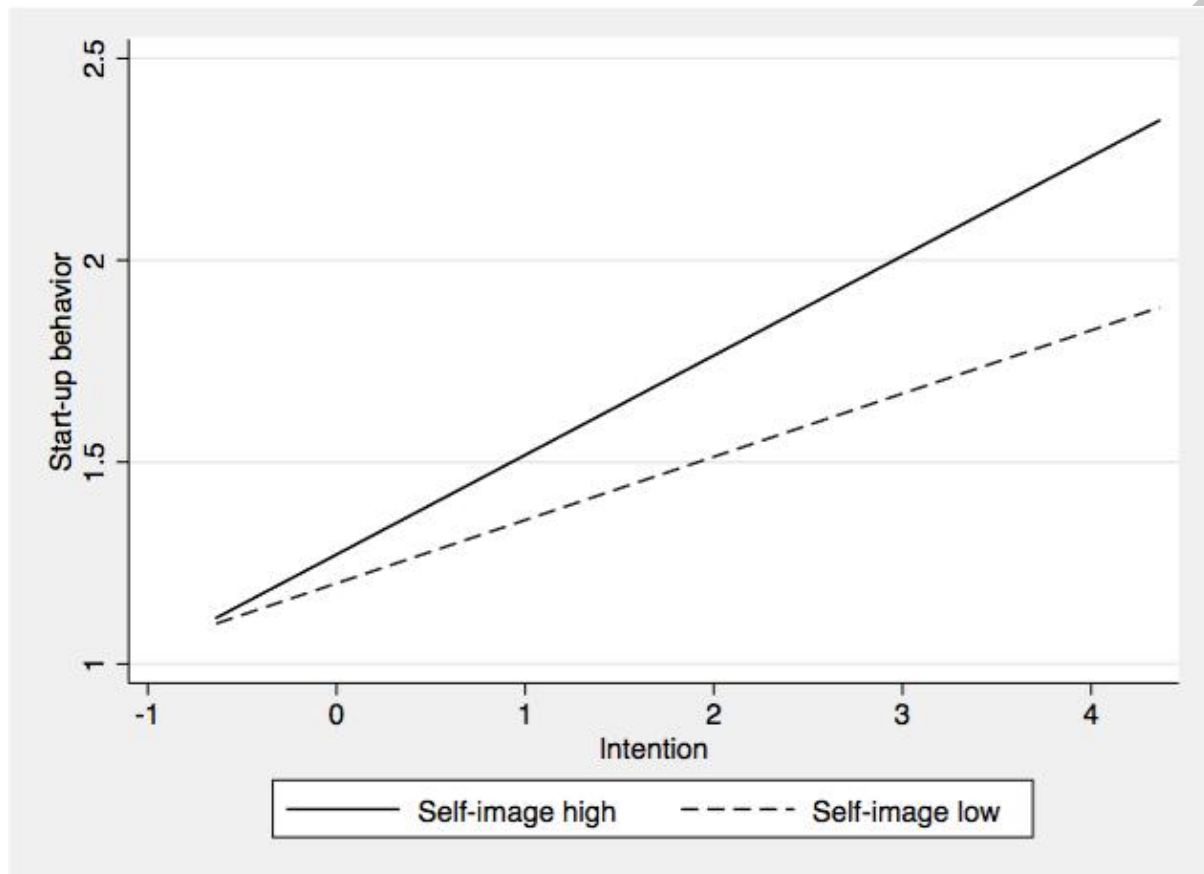
Notes:  $n=672$ . Pearson correlation coefficients. \* denotes significance at the five percent level.  $\alpha$  = Cronbach's alpha.

**Table 3** Ordinary-least-squares regression estimates pertaining to start-up behaviour

	(1)		(2)		(3)		(4)		(5)	
	$\beta$	$t$	$\beta$	$t$	$\beta$	$t$	$\beta$	$t$	$\beta$	$t$
<i>Explanatory variables</i>										
Entrepreneurial intention					.23***	12.25	.23***	12.09	.20***	9.04
Age-based self-image			.04**	1.98			.02	.93	.03	1.40
Intention*self-image									.03**	2.15
<i>Control variables</i>										
Chronological age	-.01***	2.97	-.00*	1.65	-.00**	2.03	-.00	1.34	-.00	1.44
Chronological age squared	-.00	.36	.00	.72	.00	.50	.00	.90	.00	.85
Subjective age	.36**	2.12	.33*	1.94	.20	1.29	.19	1.21	.19	1.25
Perceived behavioural control	.10***	6.33	.09***	5.11	.03**	2.02	.03	1.60	.03*	1.68
Female	-.04	1.03	-.04	1.07	.02	.65	.02	.62	.02	.57
Entrepreneurial experience	.20***	3.43	.20***	3.39	.17***	3.19	.17***	3.17	.17***	3.14
Perceived health	.08	1.50	.08	1.58	.05	1.17	.05	1.21	.06	1.36
Employed in 2011	.00	.08	.01	.26	.02	.37	.02	.45	.02	.44
Higher education	-.05	1.11	-.05	1.21	-.02	.58	-.02	.63	-.02	.60
Intercept	.99***	3.67	1.17** *	17.70	1.30***	5.31	1.43***	5.12	1.40***	5.05
R-squared	.12		.12		.28		.28		.29	
Adjusted R-squared	.11		.11		.27		.27		.27	
F-test (degrees of freedom)	9.92*** (9, 662)		9.35*** (10, 661)		25.95*** (10, 661)		23.66*** (11, 660)		22.20*** (12, 659)	
F-test compared to previous model (degrees of freedom)	-		3.92** (1, 661)		150.15*** (1, 661)		.86 (1, 660)		2.75* (2, 659)	

Notes:  $n=672$ . \*, \*\* and \*\*\* denote statistical significance at the  $p<.10$ ,  $p<.05$  and  $p<.01$  levels, respectively.  $t$  denotes the absolute value of the test statistic  $\beta/SE$ . All continuous variables are mean-centred.

**Figure 1** Effect of entrepreneurial intention on start-up behaviour when age-based self-image is low (-1 SD) and high (+1 SD)



*Notes:* The coefficient of intention is .25 ( $t=11.89$ ) when self-image is high and .16 ( $t=4.13$ ) when self-image is low. The difference between the coefficients is .09 and it is significant at the five percent level ( $t=2.15$ ).

*Highlights*

Age-based self-image is a psychological complement to chronological age.

How an individual perceives their entrepreneurial potential in terms of their age.

Two waves of data on the general adult population in Finland ( $n=672$ ).

Positive age-based self-image fosters the emergence of entrepreneurial behaviour.

Promoting positive self-images can increase age-based inclusiveness in entrepreneurship.