The effect of autonomy in sustaining social entrepreneurial intention through management education: the cases of Malaysia and Scotland

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Track 7

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1. Introduction and the context

As Blackburn and Schaper (2016) note the role of small firms and of entrepreneurship is now recognised as of key importance in the economic growth and development strategies of many nations. The independent spirit and freedom of action necessary to advance new venture development (and particularly social venture development) is a driving force of entrepreneurial value creation (Burgelman, 2001). Individual Entrepreneurial Orientation (IEO) or Intention (EI) at the organisation level is defined as "the strategy-making processes that provide organisations with a basis for entrepreneurial decisions and actions" (Rauchet al.,2009, p. 762). Nevertheless, research on IEO shows that it is not financial gain, but autonomy that is most often mentioned or rated as the most important motive for starting a business (Shane et al., 2003; Van Gelderen and Jansen, 2006).

A number of studies assume there is a vaccum between intention and behaviour between education and practice in entrepreneurship (Mohamed et al., 2012). Most of the studies have proven that entrepreneurship education can be successful only in terms of raising the "intention" to become an entrepreneur as compared to being a real entrepreneur. In addition, a number of studies have also proven that entrepreneurship education fails to meet expectations. As an example, the study conducted by Cheng et al. (2009) indicates that entrepreneurial education in Malaysia failed to influence students to take up entrepreneurial challenges, due to the low level of understanding on "what is an entrepreneurship" among the entrepreneurship course trainees. However, a study conducted by Souitaris et al. (2007) also shows that entrepreneurship programmes raised entrepreneurial attitudes and intention. Gorman et al. (1997) argue that entrepreneurship can be taught and developed through entrepreneurship education. On the other hand, Morris et al. (2001) assumes that entrepreneurial talent is given.

IEO (including students) research can be critiqued for being almost exclusively focused on North American and European research settings (Koe, 2016) and must not be confused with firm EO which has been covered widely (see: Covin and Miller, 2014). Despite work that shows that both the normative and cognitive dimension of the institutional environment influence an firm's entrepreneurial orientation (Gomez-Haro et al., 2011; Felicio et al., 2013); in recent years, researchers have suggested that EO can also be regarded as an individual level construct (Robinson and Stubberud, 2014). These suggestions have given new space to researchers to investigate EO from a new level and perspective beyond the firm level (i.e. IEO and education, also known as entrepreneurial intention) and into the education setting (Bolton and Lane, 2012). Extant studies which examined individual entrepreneurial orientation (IEO) agreed that IEO is a multi-dimension construct and it consists of elements similar to firm-level EO as seen in Covin and Miller (2014), and that the type of autonomy may be as important as the amount (e.g., Janz, et al., 1997). Although Lumpkin and Dess proposed the inclusion of autonomy as a dimension of firm EO in 1996, few firm EO studies have investigated autonomy as an element of firm EO, let alone IEO or EI (Rauch et al., 2009) even though the role and importance of some types of autonomy have been studied in prior management research (e.g., Hart, 1991).

A primary reason for this shortcoming may be the absence of an effective means to measure autonomy in an IEO context (Lumpkin et al., 2009, Bolton and Lane, 2011; Macaskill and Taylor, 2010). Autonomy is not one of the "original" dimensions of firm EO identified by Miller (1983) and developed by Covin and Slevin (1986, 1989). Furthermore, some researchers have suggested that autonomy is an antecedent of entrepreneurial behaviour rather than one of its essential components. In addition the growing field of Social entrepreneurship has not been studied from an EI perspective. This study aims to combine the above. Martin-Gutierrez et al.

(2015) show that previous innovation behaviours as freshmen, current levels of autonomy and cognitive demands are positively related to individual innovation among university students (in western settings).

Therefore, the study is based on the work of Bolton and Lane (2011) who develop an innovative measurement instrument for EI to be used to measure the EI of students and other individuals. Bolton and Lane (2011) and Yu et al. (2019) suggest testing replication of the instrument (and the role of Autonomy) in other regions and setting (Lumpkin et al., 2009; Baluku et al., 2019). In addition, according to Bolton and Lane (2011) autonomy has not been widely validated by other empirical work to date. The study also follows a call from Smith and Woodworth (2012) for more generalizable results in terms of self –efficacy and autonomy in education for entrepreneurial intention of students in social entrepeneurship. Finally, as De Bruin and Teasdale (2019) state It is not new to suggest that Social Entrepreneurship as a field is characterised by a lack of large-scale quantitative studies. Social entrepreneurship is relatively an emerging area of investigation within the entrepreneurship literature (Newey and Zahra., 2009). As Yu et al. (2019) state it is important to examine similar research questions regarding autonomy across a larger number of countries to more adequately represent the ranges of performance-based and socially supportive cultures.

Following from the above, the study examines what is the role of autonomy on individual social entrepreneurial orientation for students. Furthermore, it examines the differences between the emerging market setting and developed market to gather an understanding of context differences.

2. Relevant literature

Entrepreneurial orientation: Autonomy defined and measured

Autonomy refers to self-organization and self-regulation in pursuit of goals (Deci and Ryan, 2000; Lumpkin et al., 2009). For social entrepreneurship and entrepreneurship per se to thrive in many organizational contexts, "the exercise of autonomy by strong leaders, unfettered teams, or creative individuals who are disengaged from organizational constraints" is required (Lumpkin & Dess, 1996, p. 140). Not to be confused with self-efficacy which is a belief in one's means (Maddux and Kleiman, 2016). Research has shown that self-employed individuals enjoy more autonomy than people in other forms of employment (Hundley, 2001; Lange, 2012; Schneck, 2014). Autonomy is strongly associated with entrepreneurship because of the decisional freedoms it entails(Lange, 2012; Prottas, 2008; Schjoedt, 2009). As firm size rises, the role of and space for autonomy has seemed to fall (Provan, 1984) while the opposite is observed in individual entrepreneurship where autonomy is seen as a critical factor (Soriano et al., 2012; Lumpkin and Dess, 1996). Engagement and persistence in activities that individuals find interesting or enjoyable are facilitated by the desire to satisfy the three basic psychological needs: autonomy, competence, and relatedness (Deci and Ryan, 2000). Autonomy can be possessed by either individuals or groups and can exist for either lower-level employees, entrepreneurs or among more senior decision makers (Langfred, 2000). Sandberg (1982) argues that individuals and work groups cannot be classified simply as autonomous or not autonomous; instead, types and levels of autonomy fall along key continua. The level of autonomy a team possesses has been positively related to effective knowledge management,

such that higher levels of autonomy facilitate knowledge creation, transfer, and application (Janz & Prasarnphanich, 2003; Smith, 2001).

Performance based vs Socially supportive cultures – Scotland and Malaysia

Empirical studies on spatially varying relationships of new firm formation indicate that the rates of entrepreneurial activity differ between regions and within countries (Cheng and Li, 2011). Evolutionary and institutional perspectives on entrepreneurship (e.g., Aldrich & Martinez; 2001;Baumol, Litan, & Schramm, 2007) argue that in addition to supply-side variables, predicting individual entrepreneurship rates at the national level requires inclusion of the situational context. Demand-side variables which refer to a broad range of such situational variables (Thornton, 1999; Verheul et al., 2002; Wennekers et al., 2002), including the existence of entrepreneurial opportunities (Leibenstein, 1968; Shane & Venkataraman, 2000), the quality of general national institutions as perceived, as well as those institutions more specifically aimed to support entrepreneurship (Bosma et al., 2009; Bowen & de Clercq, 2008; Djankov et al., 2003). Emerging markets such as Malaysia are facing large institutional transformations and present substantial opportunities and challenges for entrepreneurial individuals attempting to begin ventures (Boso et al., 2013). Malaysia is an interesting representatives of SouthEast Asia and are diverse from the rest of Asia warranting further research (Kilenthong and Ruenanthip, 2018). Malaysia is an under researched context when it comes to EI and new venture creation (Fitzsimmons and Douglas, 2005) as it experiences low levels of youth participation in enterprising regardless of high levels of government promotion (Robouan et al., 2017). Regarding social enterprises, they are different from conventional enterprises because social enterprises aim to optimize the value for social ends. In addition, the supply of adequate number of able and successful entrepreneurs is considered as one of the leading determinants of growth, development and maturity for any country, large or small (Sarif et al., 2013).

Malaysia is a suitable country to study entrepreneurship (and social entrepreneurship) in developing country context due to its remarkable economic growth offering opportunities for new venture creation (3-5 per cent per year from 2000 onwards) and also due to the fact that The development of entrepreneurship, as both concept and activity, has been growing in importance in Malaysia. The perceived importance of entrepreneurship to the growth of Malaysia's economy is evidenced by the sheer amount and variety of supporting mechanisms and policies that exist for entrepreneurs, including funding, physical infrastructure and business advisory services. It is clear however, that a paradigm shift and some improvement in policy-making processes are needed (Ariff and Abubakar,2003). Malaysia has participated in the Global Entrepreneurship Monitor (GEM) since 2006. Another interesting and unique fact is that despite the positive enivonronment the total entrepreneurial activity index (TEA) is low (but rising) at 4.7% and ranked 62 out of 64 countries and local Malay youth are not embracing entrepreneurship as rapidly as in other countries, raising questions over the effectiveness of business courses (GEM Global Report 2016/2017). Essentially, entrepreneurship is crucial to the rapid growth of Malaysia's economy and distribution of wealth and increasing participation is vital through education (Boso et al., 2013) and the lack of participation in such a dynamic environment warrants research. Is it a case of a misimplemented one size fits all model of education that needs further research? . Meanwhile Scotland is a good comparison as it is a

member of the UK, a strong promoted and enabler of social innovation (Copus et al., 2017) and with a much stabler economy than Malaysia.

The study of social entrepreneuship in the context of Malaysia is very limited (Dacanay, M.L, 2005). Given that Malaysia is a pedominatly Muslim country, social entrepreneuship can be viewed in the context of "waqf" as per the definition presented above (Short et al., 2009). Waqf as framework for economic and social sytem can be found in many studies (Braten, 2013, Orbay, 2016). However, the specific application of waqf in the entrepreneurship literature is relatively recent (Amuda, 2013). Although waqf activities have increased in the last decade, waqf institutions still lack a hollistic actions plan. Social entrepreneurship amongs the Muslim or waqf has existed in Malaysia for several decades albeit misunderstood or mismanaged.

In Scotland, on the other hand, small enterprises account for 99% of all enterprises in Scotland and 53% of employment (Scottish Corporate Sector Statistics, 2012). Unlike Malaysia, Scotland has a track record in supporting youth entrepreneurship. Recent decades have seen substantial growth in the range of assistance programmes for entrepreneurs across the world with an expanding range of interventions and support focused on promoting entrepreneurship (Blackburn and Schaper, 2016). Scotland is often seen as being at the forefront of policy innovation in the relation to enterprise policy (Brown and Mason, 2016). In particular, Scotland has been seen as being a 'vanguard' in terms of creating an environment that is supportive of social enterprise (Steiner and Teasdale, 2017).

Two very different settings to compare as suggested by Mabunda Baluku et al. (2019). As Stephan and Uhlaner (2010) show in their study on entrepreneurship culture in multiple countries Scotland (the UK) scores higher than Malaysia in "Performance Based Culture; ie. a culture that rewards individual accomplishments (vs. collective membership, family relationships, or position) and in which systematic, future-oriented planning is viewed as a key way to achieve high performance. Malaysia scored higher in "Socially supportive culture"; ie. a direct measurement of social capital as an 'instantiated informal norm that promotes co-operation'. This divergence between the two countries provides an interesting platform to compare findings. Is a one size fits all education system adequate in both settings to promote social entrepreneurship and boost autonomy? Is autonomy the same in both settings?

In countries where collectivism prevails (e.g. many emerging markets), the sense of community would facilitate support for nascent entrepreneurs. The sense of community can be deteriorated by economic and cultural changes and, as a consequence, the family and social support for new entrepreneurs could diminish. However, in later stages of the development process, high-income countries benefit from a cultural environment characterized by autonomy which stimulates the pursuit of opportunities by means of entrepreneurial activities (Linan and Fayolle., 2015)

Theoretical background

The study focuses on the Theory of planned behaviour. The theory of planned behavior is an extension of the theory of reasoned action (Fishbein & Ajzen, 1980) made necessary by the

original model's limitations in dealing with behaviors over which people have incomplete volitional control. As stated in the theory of planned behaviour, intention or attitude requires resources to achieve its planned behaviour. As Ajzen (1991) states according to the theory of planned behavior, perceived behavioural control, together with behavioral intention, can be used directly to predict behavioral achievement, holding intention constant, the effort expended to bring a course of behavior to a successful conclusion is likely to increase with perceived behavioral control. Some authors argue that entrepreneurship can be taught or encouraged through entrepreneurship education (Drucker, 1985, Gorman et al., 1997). Which is the view of the study. The study adopts an innovative demand side view (Stephan and Uhlaner, 2010) and moves beyond supply side variables to measure the role of autonomy in EI as a resource available to potential student social entrepreneurs in emerging markets in comparison with developed markets. Figure 1 presents the conceptual framework used based on the Theory of Planned Behavior.

[Figure 1]

Hypotheses:

The following hypotheses are presented:

H1: There is a significant main effect of education on autonomy

H2: There is a significant main effect of country of study on autonomy

H3:There is a positive causative relationship between number of languages spoken and autonomy

H4: There is a significant main effect of work experience on autonomy

H5: People who score higher in autonomy questions, have an increased likelihood of perceiving themselves as likely to start a business.

H6: People who score higher in autonomy questions, have an increased likelihood of perceiving themselves as likely to start a social business.

3. Methodology

Participants

Having received favourable ethical review by Glasgow Caledonian University, we managed to secure access to six higher education institutes (HEI) in order to recruit a total of 357 participants. Students were recruited for the experiment through calls for participants in module forums on the online learning site 'Blackboard'. Our group sizes were fairly uneven, with 107 participants being recruited from one HEI in Scotland, and 250 being recruited from five HEIs in Malaysia. We acknowledge that clustered sampling as well as unequal groups

are more likely to create unsystematic error in the results of the analysis due to biased samples, hence, we adopted more conservative post-hoc test in order to control the inflation of the type I error rate during multiple comparisons. We also provide a standardized measure of effect size as a method of evaluating the distance between the medians of the groups. The vast majority (87%) of participants were aged 18-29 leading us to remove age from the analysis.

Apparatus

A survey was designed using a combination of Likert-scaled questions (with scores ranging from 1-7) and categorical questions (used as independent variables in our study). The survey items were constructed to reflect the four factors indicated by literature, i.e., risk and innovation, national norms and close environment, self-efficacy, and autonomy. The survey was uploaded online onto Google forms. Questions were answered through clicks only, there was no need to type, making our survey instrument simple to use on touchscreen interfaces as well. The independent variables were used for exploratory data analysis to check for moderator effects. These were: country of study; work experience; sex; education; and number of languages spoken.

Procedure

Participants were asked to click on the link on their module page, if they were happy with participating in the study. Informed consent was taken by asking students to click on a checkbox that indicated they have read and understood the information sheet provided at the top of the survey. Participants were made aware that the survey was anonymized, no information could be traced back to them, and they could withdraw at any time by simply closing the browser tab.

Analysis of results

Model validation and reliability analysis

We used Principle Component analysis (PCA) to reduce the dimensionality of our survey into the latent variables identified in literature, i.e.: risk and innovation, national norms and close environment, self-efficacy, and autonomy. The Kaiser, Meyer, Olkin measure of sampling adequacy was used to confirm that there is sufficient dimensionality in our survey to support the use of PCA, this was indeed confirmed (KMO = 0.92). Next, we checked the reliability of questions in our survey using Cronbach's alpha (something we had done initially with a pilot study, and found $\alpha > 0.8$). Our results suggested very high internal consistency ($\alpha = 0.95$), with no suggestions to drop any of the items in order to increase the score. Horn's parallel analysis (Horn 1965) was used as an objective measure of component retention for PCA; the analysis was done with the help of the 'paran' library in R (Dinno, 2009). Interestingly, after 1500 iterations the Eigen decomposition of the correlation matrix suggested we retain six components rather than three. The PCA model was built with the use of the 'pca()' function found in the 'psych' R library (Revelle, 2018), using the standard orthogonal varimax rotation. Item loadings > |0.4| were used as the threshold for identifying which items contributed to the construction of the components.

Having re-evaluated the results of the PCA, we concluded that our initial model was not supported by our findings. Instead of having one component for autonomy, the results of the PCA, and the item loadings, suggested that autonomy was further split into three components. We evaluated these components and suggest that they measure the following three dimension in the reduced data set: personal belief; freedom of choice; and cultural/institutional authoritarianism. The retained components (RCs) along with their item loadings are presented in Table X. It is worth noting that the last two components in table X appear related qualitatively, but participants studying in Malaysia scored them differently. Interestingly, when running the PCA only on participants studying in Scotland we found five components rather than six, with the last two components (i.e., freedom of choice and cultural/institutional authoritarianism) loading into one component instead. We suggest that this phenomenon relates to a form of cultural dissonance that is perhaps an indication of a shift from centralism to neo-liberalism in Malaysian universities, as discussed by Mok (2010).

Table 1 – Retained components following principle component analysis

Component	Sample Items	Loadings
Self-Efficacy	"I prefer to 'step-up' and get things going on projects rather than sit and wait for someone else to do it"	.55
	"I can identify potential capital sources for the venture"	.5
Risk and Innovation	"I like to take bold action by venturing into the unknown"	.58
	"I am willing to invest a lot of time and/or money on something that might yield a high return"	.49
National Norms and Close Environment	"Entrepreneurs as individuals are admired in my country"	.66
	"To turn a new idea into businesses is an admired career path in my country"	.63
Personal Beliefs	"How hard do you think it will be to start a business?"	.5
	"How certain of success are you?"	.72
Freedom of choice	"I feel free to do things my own way"	.55

	"I generally feel free to express my ideas and opinions"	.43
Institutional Authoritarianism	"In my daily life I frequently have to do what I am told" "I have to do things against my will"	.62 .7

The results of our analysis prompted us to re-construct the conceptual model in order to include the new components (see fig 2). This also prompted us to restructure our hypotheses, i.e.:

H1: There is a significant main effect of education on all forms of autonomy

H2: There is a significant main effect of country of study on all forms of autonomy

H3:There is a positive causative relationship between number of languages spoken and all forms of autonomy

H4: There is a significant main effect of work experience on all forms of autonomy

H5: People who score higher in the three autonomy components, have an increased likelihood of perceiving themselves as likely to start a business.

H6: People who score higher in the three autonomy components, have an increased likelihood of perceiving themselves as likely to start a social business.

[Figure 2]

Autonomy and Education Level

We used a semi-parametric MANOVA with the help of the 'MANOVA.RM' package in R (Friedrich et al., 2016) as an omnibus test to explore whether education level (IV) has an overall significant impact on the scoring of the three identified types of autonomy (DVs): Personal beliefs, freedom of choice, and institutional authoritarianism. The results of the omnibus test were significant (Wald-Type statistic: $\chi^2(9) = 39.32$, $p < 0.01$). The p-value shown is the result of resampling using parametric bootstrapping (as a method of adjusting the test statistic for the parametric violations caused by unequal sample sizes).

Following the significant result of the first omnibus test, three independent Kruskal-Wallis tests were used on each DV separately. Partial eta-squared ($\eta\rho^2$) was used as an effect size measurement for the tests, and was calculated using the formula suggested by Cohen (1965), and then again by Lakens (2013):

$$\eta\rho^2 = \frac{F * (df_{effect})}{F * (df_{effect}) + df_{error}} \quad (1)$$

Where df_{error} is $N - k$, with N being the sample size and k being the number of groups, df_{effect} is k-1; while F is the F-statistic retrieved from the chi-squared value such that:

$$F(df_{effect}, df_{error}) = \frac{\chi^2}{k-1} \quad (2)$$

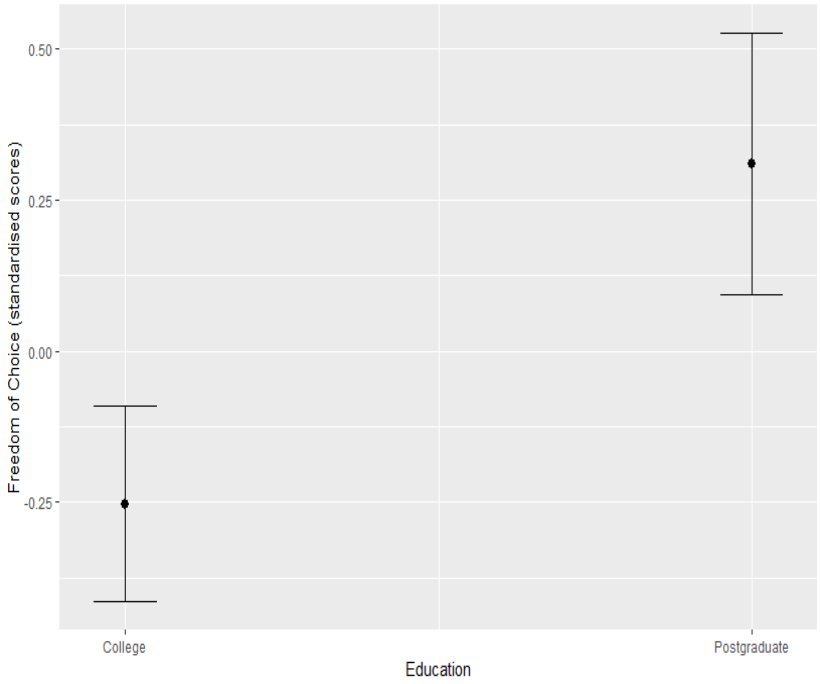

Figure 1 – Differences in 'Freedom of Choice' scores between college-level education and postgraduate-level education (error bars are 95% CI).

The results suggest that education level has a significant impact on the way participants scored freedom of choice ($\chi^2(3) = 9.9$, $p = 0.02$, $\eta\rho^2 = 0.05$) and on their perception of institutional authoritarianism ($\chi^2(3) = 9.9$, $p = 0.02$, $\eta\rho^2 = 0.03$), but not on their personal belief scores. Following on from the second set of omnibus tests, we used Dunn's test for multiple comparisons as a post hoc test on the two main effects previously identified. Our results suggest that undergraduates with a college-level education scored lower on 'freedom of choice' than post-graduates ($Z = -3.84$, $p < 0.001$) (Figure 1). In addition, regarding scores on institutional authoritarianism, we found that students with a secondary school level of education scored this dimension lower than undergraduates with a college-level education ($Z = -3.04$, $p = 0.01$) as well as graduates ($Z = -2.55$, $p = 0.04$) (Figure 2).

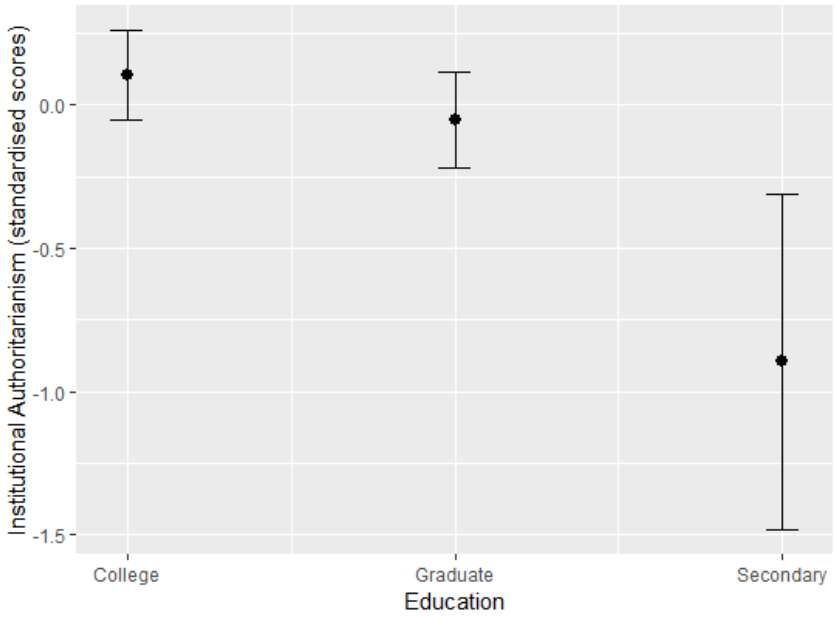

Figure 2 – Differences in 'Institutional Authoritarianism' scores between college-level education, graduate-level education, and secondary school education (error bars are 95% CI).

Autonomy and country of study

We again used a semi-parametric MANOVA (with p-value resampling) as an omnibus test to explore whether education level (IV) has an overall significant impact on the scoring of the three identified types of autonomy (DVs): Personal beliefs, freedom of choice, and institutional authoritarianism. The results of the omnibus test were significant (Wald-Type statistic: $\chi^2(9) = 39.32$, $p < 0.001$).

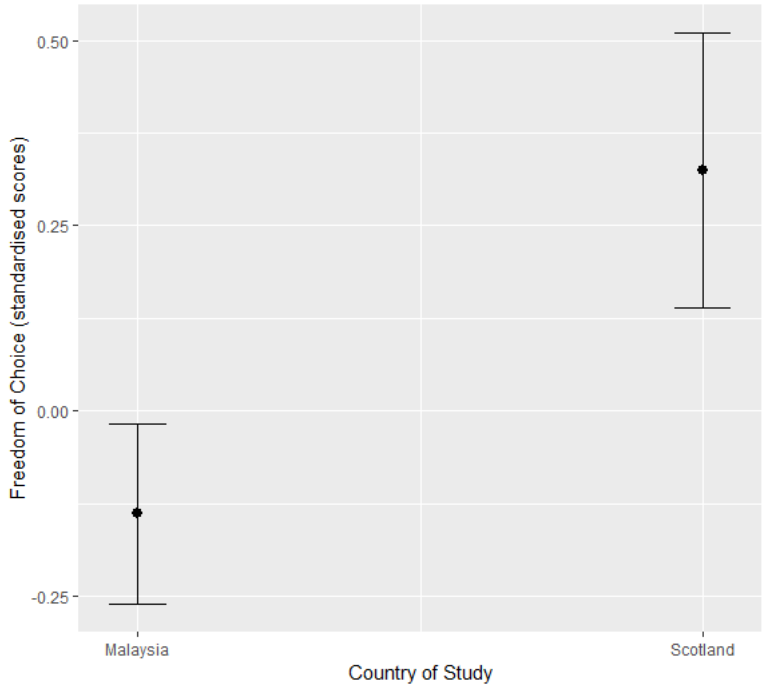

Figure 3 – Difference in 'Freedom of choice' scores between students studying in Scotland and students studying in Malaysia (error bars are 95% CI).

Following the significant omnibus test, three Wilcoxon Rank Sum Tests were used to identify whether there were difference in the means scores of the DVs between the two groups (Students in Malaysia vs Students in Scotland). Effect size was calculated by taking:

$$r = \frac{|Z|}{\sqrt{n}} \qquad 3$$

, as suggest by Rosenthal (1994). Where *r* is the effect size, *Z* is it z-statistic of the test, and *n* is the sample size.

The results indicate that students studying in Scotland scored 'Freedom of choice' significantly higher (M = 0.32, sd = 0.92) than students who were studying in Malaysia (M = -0.14, sd = 1) (W = 17307, p < 0.001, r = 0.23). Furthermore, students studying in Scotland scored 'institutional authoritarianism' lower (M = -0.59, sd = 1.08) than students studying in Malaysia (M = 0.25, sd = 0.85) (W = 7018, p < 0.001, r = 0.38). The results have been summarised in figures 3 and 4.

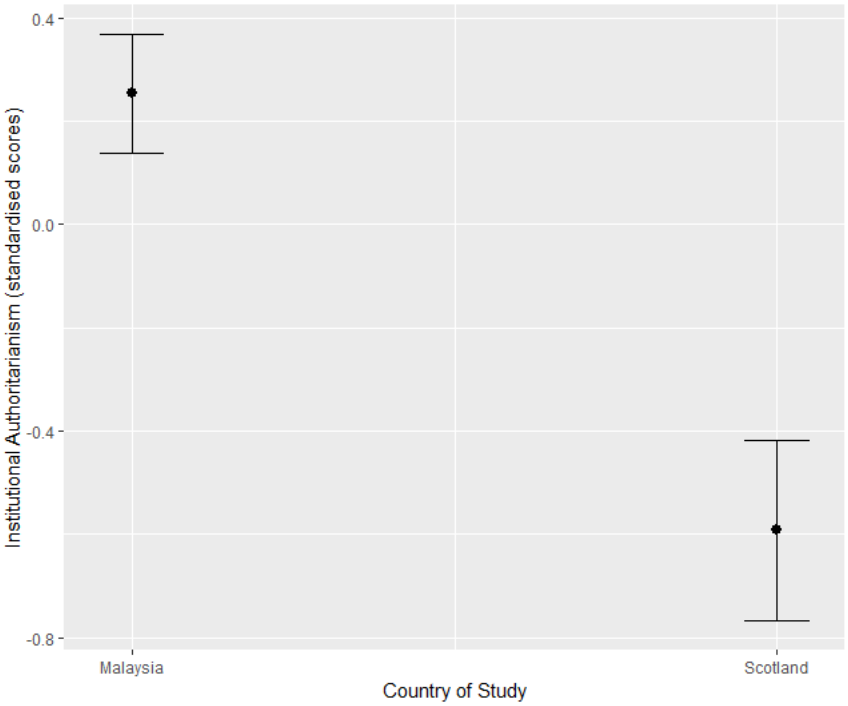

Figure 4 – Difference in 'Institutional Authoritarianism' scores between students studying in Scotland and students studying in Malaysia (error bars are 95% CI).

Autonomy and number of languages spoken

We questioned whether number of languages spoken can impact autonomy. Our hypothesis was that an increase in the number of languages spoken will lead to an increase in autonomy scores. We further hypothesized that certain types of work experience will impact autonomy scores. Only five participants reported that they spoke 5 or more languages, making it difficult to generalize anything from their scores. These participants were dropped for this portion of the analysis. Table 2 shows the frequency of participants that spoke 1-4 languages:

Table 2 – Frequency table of languages spoken by participants

No. of languages	**1**	**2**	**3**	**4**
N	64	194	74	20
%	18	55	21	6

We used simple linear regression to investigate whether languages spoken is a significant predictor of 'personal beliefs'. Our model explained a very small but significant amount of the variance in the outcome variable ($F(1,350) = 14.1$, $p < 0.0001$, $R^2 = 0.04$). The model coefficients and t-statistic for the predictor were: $b_0 = -0.55$, $b_1 = 0.25$, $t(351) = 3.76$ (see figure 5).

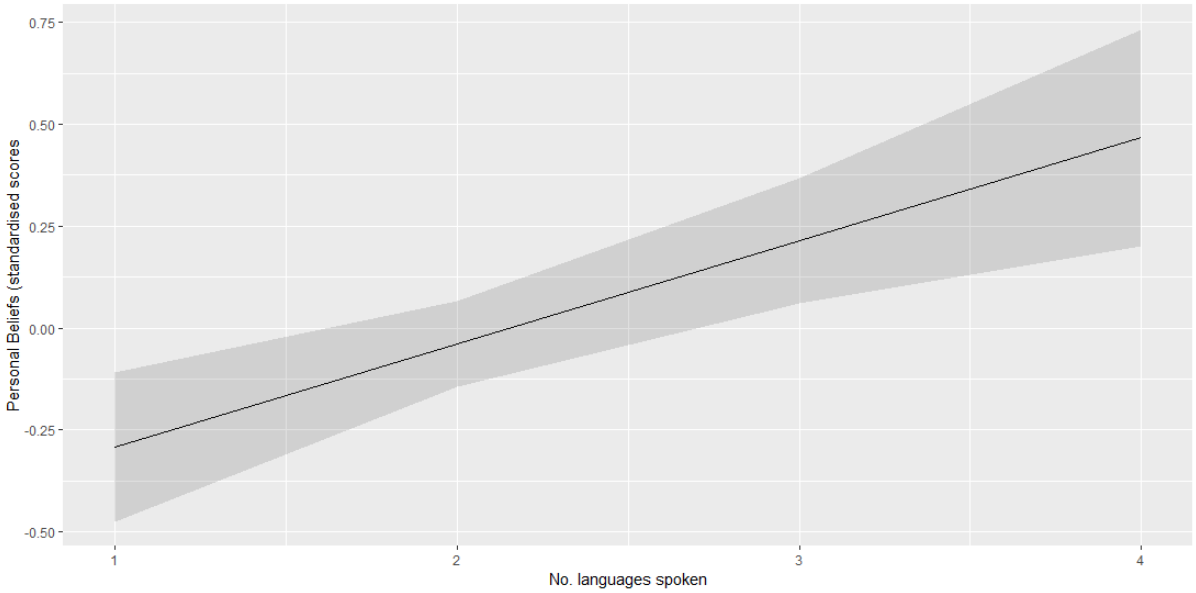

Figure 5 – Regression model with 'Personal Beliefs' as the outcome variable and number of languages spoken as the predictor (shaded area is 95% CI)

Next, we used simple linear regression to investigate whether number of languages spoken is a significant predictor of 'Institutional authoritarianism'. Our modelling approach suggests that number of languages explains a small but significant amount of the variance in the component scores ($F(1,350) = 5.56$, $p = 0.02$, $R^2 = 0.02$). The model coefficients and t-statistic for the predictor were: $b_0 = -0.32$, $b_1 = 0.16$, $t(351) = 2.36$ (see figure 6)

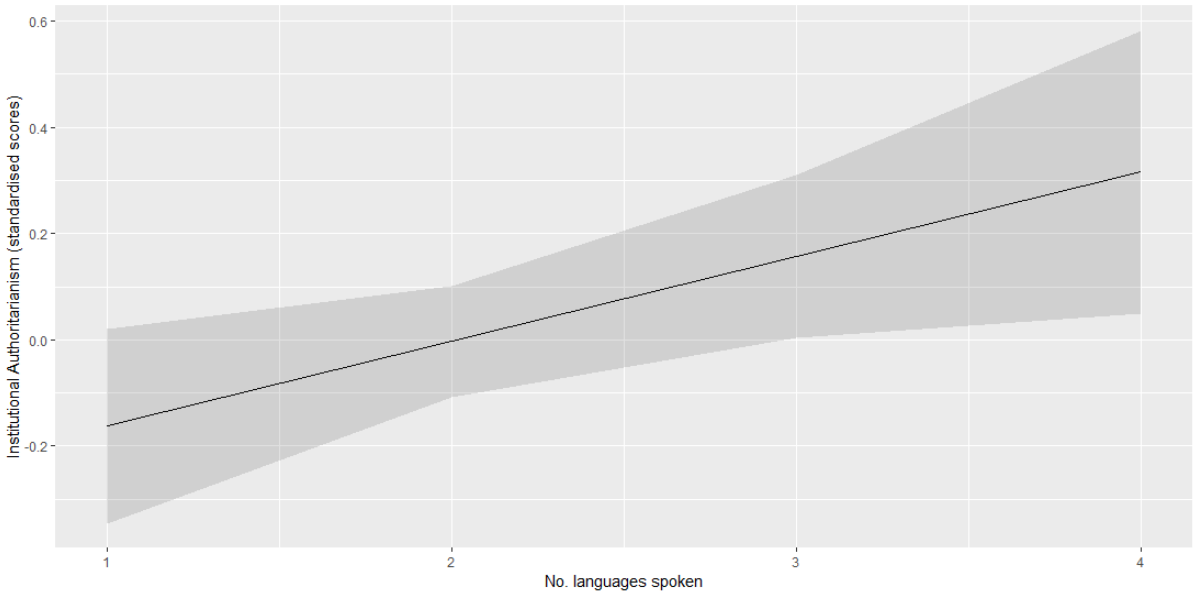

Figure 6 – Regression model with 'Institutional Authoritarianism' as the outcome variable and number of languages spoken as the predictor (shaded area is 95% CI)

We failed to find a significant causative effect between number of languages spoken and participant perception of their 'freedom of choice'.

Finally, we checked all the models for the usual parametric assumptions (normality of residuals, homoscedasticity, etc.) and did not find any parametric violations, despite having ordinal predictors.

Autonomy and perceived likelihood of starting a business

On average we found that 81% of all participants envisioned themselves as one day starting a business (69% of students studying in Scotland, and 86% of students studying in Malaysia). We hypothesized that individuals who score higher on autonomy are increasingly likely to perceive themselves as one day starting a business. We modelled this causative effect using logistic regression with perceived likelihood of starting a business as the outcome binomial variable and autonomy scores for all three components: personal beliefs, freedom of choice, and institutional authoritarianism, as well as country of study as the predictors. Stepwise regression using BIC as the retention criterion, which adds a penalty term for adding parameters to the model (Schwarz, 1978), was used to reduce the number of redundant variables and tackle overparametrisation. Bayes Factors were extracted from the BIC scores using the formula suggested by Wagenmakers (2007), and were used as a method of evaluating likelihood of model fits (i.e: L(M|D):

$$BF10 = e^{(BIC1-BIC2)/2} \quad (4)$$

Where BIC1 is the highest BIC of the two competing models. In the end, we found a main effect for both country of study and personal beliefs, but no interactions between the predictors.

Table 4 – Summary of stepwise regression using BIC as the retention criterion. Bayes factors are compared to the model with the lowest BIC score. R^2 is McFadden's pseudo-R^2.

Model no.	Parameters	BIC	Bayes Factors	R^2
1	Country of Study + Personal beliefs	283.12	1	0.23
2	Model 1 + Freedom of choice	287.7	48.75	0.23
3	Model 2 + Institutional Authoritarianism	293.39	1.44×10^4	0.23

The results of the stepwise regression (shown in table 4), indicate the best model fit had two predictors: personal belief scores, and country of study, with the second best model (i.e., model 3) being ~ 49 times less likely to be the best fitting model. The model coefficients have been added to Table 5.

Table 5 – Model coefficients of logistic regression with 'perceived likelihood of starting a business' as the outcome variable and 'country of study' as well as 'personal belief' scores as the predictors.

	Estimate	Std. error	Z value	p-value
Intercept	2.11	0.21	9.89	<0.001
Personal beliefs	1.27	0.187	6.79	<0.001
Country of study	-0.81	0.32	-2.49	0.01

We note that being a logit model, the coefficient estimates shown in table 5 are log-odds. By taking the exponent we can make better sense of the model. In short, for the personal belief score (which is standardized), for one standardized unit of increase there is a 1.27 increase in log odds, or $e^{1.27} \sim 3.57$ increase in the odds of envisioning oneself as starting a business (257% increase). For country of study the odds ratio between Scotland and Malaysia is $e^{-0.81} = 0.44$, i.e., the odds of envisioning starting a business for someone studying in Scotland is 0.44 times that of someone studying in Malaysia (56% lower).

Autonomy and perceived likelihood of starting a social business

On average we found that 69% of all participants envisioned themselves as one day starting a social business (41% of students studying in Scotland, and 79% of students studying in Malaysia). We hypothesized that individuals who score higher on autonomy are increasingly likely to perceive themselves as one day starting a social business. We modelled this causal effect using logistic regression with perceived likelihood of starting a business as the outcome binomial variable and autonomy scores for all three components: personal beliefs, freedom of choice, and institutional authoritarianism, as well as country of study as the predictors. Stepwise regression using BIC as the retention criterion was again used, in order to reduce the number of redundant variables.

Table 6 – Summary of stepwise regression using BIC as the retention criterion. Bayes factors are compared to the model with the lowest BIC score. R^2 is McFadden's pseudo-R^2.

Model no.	**Parameters**	**BIC**	**Bayes Factors**	**R^2**
1	Country of Study + Personal beliefs	365.64	1	0.21
2	Model 1 + Freedom of choice	370.78	13.07	0.22
3	Model 2 + Institutional Authoritarianism	376.37	213.79	0.22

Our results suggest there is a main effect of both personal beliefs and country of study on the outcome variable, but no interaction between the two variables (table 6). The coefficients, z-scores, and p-values of the model are shown in table 7. The best fitting model (model 1) was

~ 13 times more likely to fit the data than the next best fit (model 2), and ~214 times more likely to fit the data than model 3.

Table 7 – Model coefficients of logistic regression with 'perceived likelihood of starting a social business' as the outcome variable and 'country of study' as well as 'personal belief' scores as the predictors.

	Estimate	Std. error	Z value	p-value
Intercept	1.52	0.17	8.87	<0.001
Personal beliefs	0.89	0.15	5.75	<0.001
Country of study	-1.86	0.28	-6.66	<0.001

For the personal belief score (which is standardized), for one standardized unit of increase there is a 0.89 increase in log odds, or $e^{1.27} \sim 2.44$ increase in the odds of envisioning oneself as starting a social business (144% increase). For country of study the odds ratio between Scotland and Malaysia is $e^{-1.86} = 0.16$, i.e., the odds of envisioning starting a social business for someone studying in Scotland is 0.16 times that of someone studying in Malaysia (84% lower).

Autonomy and work experience

Finally, we hypothesized that work experience will have a significant main effect on measures of autonomy. Table 8 shows a frequency distribution of work experience for our sample.

Table 8 – Frequency table of participant work-experience

	Working			**Not Working**		
Type of work experience	Fixed-term	Full time	Part time	Never worked	Recently employed	Unemployed
N	10	82	162	47	34	22
%	3	23	45	13	10	6

We used a semi-parametric MANOVA (with p-value resampling) as an omnibus test to explore whether work experience (IV) has an overall significant impact on the scoring of the three identified types of autonomy (DVs): Personal beliefs, freedom of choice, and institutional authoritarianism. The result of the omnibus test was not significant. Therefore, we failed to reject the null hypothesis (i.e., mean autonomy scores are equal between all work experience groups).

4. Discussion and implications

The composition of autonomy

As presented in the results, autonomy seems to break down into components unlike its use in the literature (Covin and Miller, 2014; Rauch et al., 2009). This is particularly evident in our results and in the dichotomy between Scotland and Malaysia or performance based vs socially supportive cultures (Stephan and Uhlaner, 2010) as each component shows distinct associations. We examine the differeces among the components discovered and autonomy as one below:

Personal beliefs

This component presents internal psychological inhibitors to acting towards engaging in entrepreneurial action. The difference with the other components such as freedom of choice is that the will is not there and the barriers are internal as opposed to being affected from the external environment.

Freedom of Choice

This component differs from the others as it denotes and represents the barriers erected towards action and choice; ie. The will to act is there from the potential future entrepreneur but these psychological inhibitors act as barriers and may be subjective or cause by culture or the personal characteristics of the person in contrast with the external environment. In contrast with personal beliefs, these inhibitors are external.

Institutional authoritarianism

This component presents the effect of the external regulatory environment on action and will. The difference with freedom of choice is that this component deals with tangible and objective barriers such as law, regulation that cannot be changed and not psychological barriers that may be intangible or subjective.

The hypotheses thus are explained below:

H1: Autonomy and Education Level

As shown above, the results suggest that the education level has a significant impact on the way participants scored freedom of choice and on their perception of institutional authoritarianism, but not on their personal belief scores. Our results also suggest that undergraduates with a college-level education scored lower on ‘freedom of choice’ than post-graduates. In addition, regarding scores on institutional authoritarianism, we found that students with a secondary school level of education scored this dimension lower than undergraduates with a college-level education.

The results show us that autonomy is firstly significantly associated with education as a variable, and secondly should be tested as components. Personal belief did not show significance towards education as it is internal and is not affected by external factors such as education. Components influenced externally such as Freedom of Choice and Institutional Authoritarianism showed associations as both are affected by education. As education rises empowerment rises and skills rise meaning autonomy per se rises. As for breaking down education, institutional authoritarianism was found to be linked to college-level education likely because of the rigidity of the education system in both Scotland and Malaysia after a certain benchmark. While post-graduates with a college level education scored higher on freedom of choice as their autonomy rose due to education levels. As Matlay and Van Gelderen (2010) point out , autonomy should have a significant role in education and modelling education systems and entrepreneurship courses. The provision of choice is an important autonomy-supportive practice, especially if it allows the student to choose activities that are personally relevant (Assor et al., 2002). Stimulating the self-initiation of learning activities, encouraging independent thinking (Assor and Kaplan, 2001) and allowing students to find their own solutions to puzzles or problems (Stefanou et al., 2004) are other examples of autonomy-supporting practices that provide students with leeway.

H2: There is a significant main effect of country of study on autonomy

As Baluku et al. (2019) state, regarding country differences, there are variations in EI arising from cultural (Liñán and Chen, 2009; Shinnar et al., 2012) and economic contexts. Particularly, it has been reported that individuals in less developed countries tend to have stronger EI (Nabi et al., 2011) but not necessarily score high on autonomy or its sub components as our research shows. Yet these differences also tend to affect entrepreneurial learning outcomes (Van Auken et al., 2006). Following Bolton and Lane (2011)'s statement that attempts should be made to further validate the IEI (within which is autonomy) using students from universities in other parts of the country and world and across other age groups the results indicate that students studying in Scotland scored 'Freedom of choice' significantly higher than students who were studying in Malaysia. Furthermore, students studying in Scotland scored 'institutional authoritarianism' lower than students studying in Malaysia. The results show according to (Stephan and Uhlaner, 2010) 'swork on SSC and PBC cultures that freedom of choice variables are key in determining the will to engage in entrepreneurship for university students. The differences between Malaysia and Scotland can be seen in the rigidity of social support as mentioned above and also in the role played by government and public support as mentioned in the section above. This supports the concept that entrepreneurship is an individual endeavour for the most part least adaptable to collective societies. Therefore, support should be directed to the individual rather than at a collective level.

H3:There is a positive causative relationship between number of languages spoken and autonomy

Number of languages spoken is evidently linked to higher education and a wider view of the world. Although it presents no universial cognitive advantages (Bialystok, 2011) it is linked to an advantage on tasks which require more analyzed linguistic knowledge (Jessner, 2017). We failed to find a significant causative effect between number of languages spoken and participant

perception of their 'freedom of choice'. Our modelling approach suggests that number of languages explains a small but significant amount of the variance in the component scores. It seems the number of languages spoken was not associated to institutional authoritarianism or affected by external factors. This may warrant further research. The number of languages spoken is a form of education particularly when dealing with a global market (Li and Exley ,2019).

H4: There is a significant main effect of work experience on autonomy components

The result of the omnibus test was not significant. Therefore, we failed to reject the null hypothesis (i.e., mean autonomy scores are equal between all work experience groups). Work experience was hypothesized to affect the individual's autonomy. It is interesting to not that Robichaud, McGraw and Roger (2001) argue that that motivation falls into four categories: (1) extrinsic rewards, (2) independence/autonomy, (3) intrinsic rewards, and (4) family security. Extrinsic motives are the economic reasons that entrepreneurs work, whereas intrinsic motives are related to self-fulfilment and growth. This may mean that these extrinsic motivators did not exist for our sample, and they may be the ones that link autonomy to work experience, and it is something to investigate. Ashley-Cotleur *et al* (2009) agree that extrinsic motivators for a nascent entrepreneur will include expected monetary rewards reflected in salary and benefits.

H5: People who score higher in autonomy components, have an increased likelihood of perceiving themselves as likely to start a business.

In the end, we found a main effect for both country of study and personal beliefs, but no interactions between the predictors. For country of study the odds ratio between Scotland and Malaysia is $e^{-0.81} = 0.44$, i.e., the odds of envisioning starting a business for someone studying in Scotland is 0.44 times that of someone studying in Malaysia (56% lower). This is explained in the above sections regarding cultural differences and is in line with the results.

H6: Autonomy (components) and perceived likelihood of starting a social business

On average we found that 69% of all participants envisioned themselves as one day starting a social business (41% of students studying in Scotland, and 79% of students studying in Malaysia). Regardless, our results suggest there is a main effect of both personal beliefs and country of study on the outcome variable. For country of study the odds ratio between Scotland and Malaysia is $e^{-1.86} = 0.16$, i.e., the odds of envisioning starting a social business for someone studying in Scotland is 0.16 times that of someone studying in Malaysia (84% lower). This is in line with the discussion above regarding cultural differences and types of society.

5. Conclusion and limitations

The study explored the concept of autonomy within individual entrepreneurial orientation in Malaysia and Scotland and advance the research on higher education's effect on the link between autonomy, EI and higher education. The results for the comparison between Scotland and Malaysia showed several distinct reasons why autonomy (divided into components), as a bridge between resources and intention or attitude, affects the decision to initiate entrepreneurship and social entrepreneurship for students in distinct ways. The importance of the results for education and policy have been evidenced along with several factors that are associated with increased autonomy in the student's mindset and behaviour. Autonomy as a variable is more complex than a lot of the research presents and can be subdivided into components. Furthermore, self-efficacy and autonomy tend to not be separated appropriately in the literature causing confusion.

As Langkamp and Bolton (2011) state an individual may have a positive attitude towards taking risks, but after a significant loss due to risk-taking, his or her attitude may change to a negative one which can be affected by education and potentially translate to intention. Therefore researchers, with a particular focus on education, began examining entrepreneurial attitudes and how they might be influenced by teaching and classroom experiences (Packham et al., 2010). The relationship between education itself and individual entrepreneurial intention is still in need of further research while its importance in entrepreneurial intention has been presented (Nabi et al., 2018; Westhead and Soleszvik, 2016). Past studies have shown that individual entrepreneurial orientation (IEO) plays a critical role in the pursuit of economic development, opportunity recognition, and well-being as a market-based solution to poverty (Bruton et al., 2013).The use of the research beyond only business creation is to properly advise policy and higher education systems in tailoring their programs to the needs of local culture and population. This is in order to maximise venture creation (particularly in adverse economic settings) and maximise the efficiency of intention. It is evident that the concept of autonomy needs further research potentially in wider multi-region or multi-country setting and including the concept of experience or work experience. In addition further studies could focus on the age, gender and culture variables to test differences in IEO. Despite the attention paid within much of the discourse around SE as a means for tackling gender inequality, few studies explicitly explore SE as a gendered practice (De Bruin and Teasdale, 2019).

Limitations

As expected from principle component analysis, component retention is often subjective and prone to both underfactoring and overfactoring. We opted to use a more objective approach for determining component retention –namely parallel analysis—which we anticipate is less prone to effects of experimenter bias. However, the current study needs to be followed up by a confirmatory factor analysis, preferably on a new data set, to ensure construct validity. Furthermore, violations of the parametric assumptions, particularly in the presence of largely unequal group sizes forced us to use non-parametric tests, which have a lower statistical power than their parametric counterparts. It is, therefore, more likely that we failed to find some main effects or interactions. This decrease in power was further exasperated by our limited sample size of just over 357 participants, with only 107 being in the Scotland group.

We anticipate that an increase in sample size may lead to the discovery of additional effects not reported in this study

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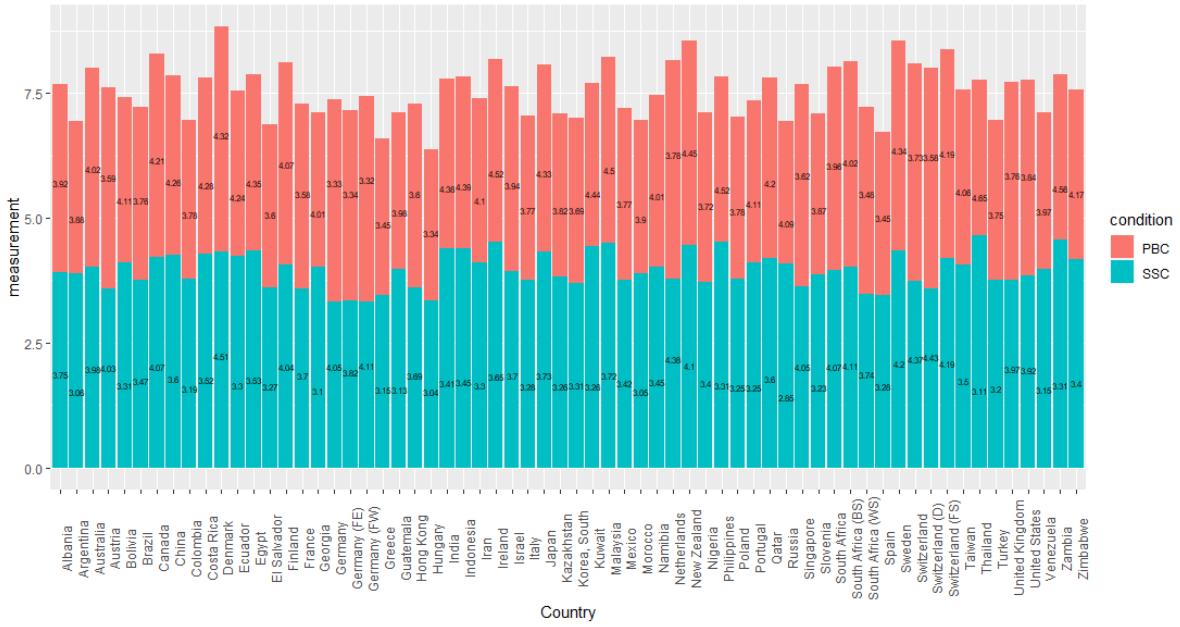
measurement
7.5
5.0
2.5
0.0
condition
PBC
SSC
Albania
Argentina
Australia
Austria
Bolivia
Brazil
Canada
China
Colombia
Costa Rica
Denmark
Ecuador
Egypt
El Salvador
Finland
France
Georgia
Germany
Germany (FE)
Germany (FW)
Greece
Guatemala
Hong Kong
Hungary
India
Indonesia
Iran
Ireland
Israel
Italy
Japan
Kazakhstan
Korea, South
Kuwait
Malaysia
Mexico
Morocco
Namibia
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New Zealand
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South Africa (BS)
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United Kingdom
United States
Venezuela
Zambia
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