Graduate employability, skills development and the UK's Universities Business Challenge (UBC) competition: *A self-determined learning perspective*

Drawing on elements of self-determined learning or heutagogy, the graduate employability impact of the UK's leading Universities Business Challenge (UBC) competition is investigated over a five year period of from 2012-17. A central research question was addressed, namely: *what do inter-university business simulations, such as the UBC, contribute to developing self-determined learner skills and graduate employability?* A mixed-methods research approach combined structured equation modelling (SEM) results of 2 student surveys from over 50 (UK) universities, with qualitative analysis of 7 student focus-groups and 15 semi-structured interviews. The article contributes to new knowledge about the role of UBC as an example of an inter-university business simulation. It models the direct and indirect effects of personal/managerial skills development and reflective learning capacity (as mediator) on perceived employability impact. There is fresh evidence to support the claim that *reflective learning* is important in the study of self-determined learning and graduate employability.

INTRODUCTION

Given recent policy demands for boosting graduate employability prospects, many UK higher education (HE) institutions are recognising a role for business simulation challenges (Artess, Hooley, and Mellors-Bourne 2017; DfBIS 2013). However, despite the growing popularity of inter-university business simulations, there are only a few empirical studies that have investigated the impact on personal skills development and the potential for future employability (van Vuuren, Fearon, van Vuuren-Cassar, and Crayford 2014). With the exception of some studies (e.g. Loon, Evans, and Kerridge 2015; Salas, Wildman, and Piccalo 2009; Strachan 2016), there is also scant scholarly research that examines the wider impact of

business simulations on management skills, or graduate careers and employability. The purpose of this research article is twofold: firstly, to address the above knowledge gaps by developing a substantial body of longitudinal research, and; secondly, to draw attention to the implications of self-determined learning for business simulations more generally.

Drawing on self-determined learning theory (heutatogy), this article investigated the UK's leading Universities Business Challenge (UBC) business simulation over a five year period from (2012-2017). In the absence of a clear definition, graduate careers-based self-determined learning (SdL) was interpreted as: ***HE learners taking responsibility for, and empowering their own simulated learning and personal skills development for future employability impact*** (Blaschke 2012; 2018; Kenyon and Hase 2013). According to heutagogy scholars, self-determined HE learners should be able to generate new knowledge, in a peer-to-peer student learning environment, and self-direct to a large extent *what* and *how* they learn as a team (Blaschke and Hase 2016). Individually, learners should also able to critically reflect on how new personal skills and team-based capabilities might impact on their future (graduate) employability prospects (Blaschke 2012).

This research contributes to empirical knowledge by investigating if and how heutagogical principles can inform a wider understanding of UBC business simulated learning, skills development and graduate employability. For example, Blaschke (2012; 2018) suggested that self-determined HE learner qualities, such as self-efficacy, creativity, adaptability, problem-solving and communication were necessary for effective SdL. In addition, understanding the nature of self-drive and a person-centric approach to graduate skills development and employability were considered to be important (Farenga and Quinlan 2016; Jackson 2016; Tomlinson 2017). However, as suggested earlier, only a few simulation studies have applied these principles, or attempted to make a formal theoretical connection between learner skills development and graduate employability. Therefore, the following research question was asked, namely:

> ***(RQ) what do inter-university business simulations, such as the UBC, contribute to developing self-determined learner skills and graduate employability?***

The remainder of the article is structured as follows. Firstly, business simulations are defined, along with a background overview of the UBC. Secondly, a new self-determined learning (SdL) model is theorized and hypotheses are developed. Thirdly, procedures and methods are outlined for *quantitative study 1*, encompassing factor analysis and measurement

modelling from two UBC learner/participant surveys. Descriptive statistics and structural modelling results are also outlined. Fourthly, an overview methodology, and combined analysis of student focus groups and semi-structured interviews findings are presented for *qualitative study 2*. Fifthly, a general discussion section helps to articulate the theoretical contributions of the research. Finally, concluding remarks are made, along with various limitations and suggestions for future research.

BACKGROUND

Defining business simulations and the UBC

In general, business simulations can be defined as:

> *"any artificial or synthetic environment that is created to manage an individual's (or team's) experiences with reality."* (Salas *et al.* 2009, 560)

Salas *et al.* (2009) noted three integral elements of modern management simulation-based training, namely: (a) role-play; (b) a physical base and; (c) online/computer mediation. Blended (team) learning business simulation formats such as the UBC involve a combination of on-line and face-to-face activities. These are preferred for their flexibility and variety of enterprise activities (Lean, Moizer, and Newbery 2014). The combination of synchronous versus asynchronous communication between facilitators and team-members also helps participants to consider their business simulation decisions, and to evaluate overall team progress (Loon *et al.* 2015). Bell, Kana, and Kozlowski (2008) suggested simulations such as the UBC often involve the idea of teams taking part in some form of competitive game play.

The UBC is the UK's longest standing (competitive) inter-university business simulation, with over 25,000 graduates world-wide having taken part since its inception in 1998. Participating HE students come from a variety of generic disciplines (e.g. business, engineering, social sciences). Many leading UK universities (typically 50+ annually) register and sponsor UBC teams (of up to 5 students) to work on business plans and enterprise simulations over a 6 month period. The UBC itself is normally held over 3 rounds. The 1st round typically involves 1-2 hours per week of purely online business simulation activity for the first 6 weeks, based on self-directed and team-led student centred learning (UBC 2018a). Facilitation and UBC team guidance is provided through a dedicated help-desk, in association

with lecturer and tutor support from each participating university. UBC team feedback on simulation decisions is provided weekly, via an online results board. Approximately, 30% of 1st round teams perform sufficiently well to reach the 2nd round (or regional (UK) semi-final). This involves a one-day live event with regional teams physically competing against each other in face-to-face business simulations. In terms of responding to their business brief on the day, all key decisions, learning content and student interactions are self-determined by UBC team members. Finally, the top 10 teams compete in a London based grand-final, with the winning team (and university) availing of prize money and the prestige of lifting the annual Challenge competition cup.

The following section theorizes how self-determined learning principles might help us understand the employability impact and personal/managerial skills development more commonly associated with business simulations, and the UBC.

THEORETICAL DEVELOPMENT

Employability impact from business simulations

Whilst somewhat clichéd, it is arguably the *taking-part* in business simulations such as the UBC that really matters, thereby helping learners to develop their personal (soft) skills, competences and prospects for future graduate employability (UBC 2018b). From a self-determined learning perspective, participants take part for variety of reasons, not least to help their own future professional development (Blaschke 2012). A heutagogical understanding of business simulation *employability impact* necessarily ties in with the themes of: (a) participant self-awareness; (b) decision-making learning, and; (c) promoting self-managed learner pathways for a successful future career (Jackson and Wilton, 2016). It is important for self-aware HE learners to capture their major learning achievements, in order to highlight their personal capabilities and career potential for future employers (Yorke 2006; Yorke and Knight 2007). In this regard, employability impact (from the HE learner perspective) has been defined as:

> *"a set of achievements – skills, understandings and personal attributes – that makes graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy."* (Yorke 2006, 8)

Self-determined learners who participate on the UBC should be able to perceive a set of personal development achievements from their overall learning experience(s) (Blaschke 2012; UBC 2018b). Students should also feel self-efficacious, and reasonably confident their action-based simulated learning experiences will help with future (graduate) employability prospects (van Vuuren, Fearon, and Cardwell 2012). Based on previous studies (e.g. van Vuuren *et al.* 2012; 2014), this article suggests that strong UBC employability impact is reflective of: (a) being able to evidence the simulated learning experience for one's graduate CV; (b) helping to discuss skills development and learning experiences during upcoming job interviews; (c) using the business simulation experience to help improve one's overall chances of getting a job; (d) helping the learner to understand how businesses operate in real world settings, and how team decision-making might work in organizational practice.

Recent employability literatures have advocated that HE students should become more career-minded and take greater responsibility for seeking out relevant experiential learning opportunities (Dacre Pool, Qualter, and Sewell, 2014; DfBIS 2013; CABS 2015). As such, HE self-determined and experiential learners should be: (a) cognitively self-aware; (b) highly critically reflective, and; (c) willing to take part in personal development activities for future employability impact, or career advancement (Blaschke and Hase 2016; Kapasi and Grekova 2017; Pegg, Waldock, Hendy-Issac, and Lawson 2012). These ideas are developed further in the next sub-section.

Self-determined learner skills and reflective learning capacity

Similar to key previous studies, this article suggests that business simulations (i.e. in blended learning, or pure on-line user contexts) are ideally suited to the study of *heutagogy* (Blaschke 2013; Eberle 2009; Hase and Kenyon 2000). Typically, self-directed and self-structured (heutagogic) learning should occur in conjunction with critical reflection, in order to develop highly motivated whole-person learning (e.g. Canning 2010; Hase and Kenyon 2007). A central premise of heutagogy (meaning *self* in Greek) is that:

> *"students are motivated to research their own interests within a programme of study and be able to apply their learning to practice and to their personal philosophy, and ultimately to influence a shift in thinking within themselves and those that they work with."* (Canning, 2010, 59)

Heutagogy assumes the ultimate learner-centred HE education experience, whereby learner generated simulation contexts (such as the UBC) become key to understanding learner skills and competency development. Self-determined learners are thus, able to:

> *"discover their own strategies for learning, develop confidence through active participation and begin to share their knowledge and understanding of key concepts."* (Canning and Callan 2010, 74)

Based on the above arguments, it is proposed that key personal skills initially practised at university (e.g. through seminar activities, group/ individual presentations, discussion groups, group projects) can develop further as learner competences during the UBC[1]. As an action-oriented business simulation, it is suggested the UBC helps university students to practice and embed their personal and managerial skills within a student centred learning environment (van Vuuren *et al*. 2014). It is also important that HE self-determined learners feel more confident and efficacious in their growing personal skills and capabilities (Blaschke and Hase 2016; Rae 2010). As part of a double-loop learning process, their personal beliefs and mental schema of decisions, actions, problems, and outcomes are constantly being questioned (Blaschke 2012). It is against this backdrop that reproducible personal and managerial skills (*i.e. leadership, teamwork, planning and organizing, and influencing people*) are developed, as the UBC business simulation progresses. Reproducible personal skills in the latter face-to-face rounds of the UBC help to demonstrate emerging managerial competences in new situations (Blaschke 2012; 2018). Therefore, in terms of self-determined learning (SdL) theoretical modelling (see Figure 1), personal and managerial skills should be clearly identifiable during the 1st round of the UBC, and reproducible during the semi and grand-final stages of the competition. These ideas underpin the following hypotheses:

H1a. Personal/managerial skills and reflective learning are reproducible throughout different rounds of the UBC competition.

H1b. Personal/managerial skills and reflective learning markedly improve as the UBC simulation progresses.

[1] Learners have the freedom to self-direct team-tasks, create learning conversations, interactions and content; thereby, mastering their interpersonal leadership skills and competences beyond the relatively rigid confines of the traditional HE class-room (Jackson 2016; Pittaway and Cope 2007).

As suggested previously, for heutagogy to flourish, participants must also be able to reflect on their personal learning and skills development (Canning 2010). In this respect, UBC self-determined learning naturally aligns with experiential learning, defined as:

> *"the process whereby knowledge is created through the transformation of experience… from the combination of grasping and transforming experience."* (Kolb 1984, 41)

Working as part of a team, HE learners should be able to combine their concrete UBC experiences with the processes of discussing, reflecting, thinking and then acting, or experimenting in an appropriate way (Kolb and Kolb 2005; Loon 2015). Self-determined learners can then use their personal and managerial skills to make strategic decisions, address business scenario problems and develop more effective (team) strategies for future collective action (UBC 2018b).

Central to this social cognitive process, is the idea of *reflective (learning) capacity* (Cathro, O'Kane, and Gilbertson 2017), whereby self-determined learners should be able to reconcile their concrete simulated learning experiences in more abstract terms, and identify areas for personal skills growth and development (Cathro *et al.* 2017; Kolb, Boyatzis, and Mainemelis 2001). In addition, self-determined learners must be able to critically reflect on how their UBC simulated learning experiences fit with classroom-based learning and pedagogy. Critically reflective learners cannot ignore, or dismiss intellectual knowledge gained during university classes or lectures (Hollman 2000; Pittaway and Cope 2007). Instead, similar to Hollman's (2000) view of experiential liberalism, self-determined learners should begin to demonstrate and evidence their new personal and managerial skills more holistically, as reflective practitioners[2]. According to Pittaway and Cope (2007) for example, students should be able to effortlessly link HE class-room learning about a subject, with their personal skills about *how-to-do*, or execute their experiential learning in practice. Therefore, a highly reflective learning capacity encourages an integrative understanding of both personal/managerial skills and academic knowledge for whole-person learner development. In turn, this should help learners to feel more confident about their UBC employability impact.

[2] Several scholars cite the advantages of writing-up reflective learning journals (e.g. Blaschke and Hase 2016) and presenting learning portfolios (Coulson and Harvey 2013). These help to evidence experiential learning and whole-person learner development, which of course can assist students in preparing for job interviews; they also help employers to better understand HE learner progression and emergent career-oriented (person) capabilities.

In summary, the following hypothesis is also investigated:

> ***H2. Reflective learning capacity mediates the relationship between personal/managerial skills development and perceived UBC employability impact.***

As a final note to this section, hypothesized relationships (H1 & H2) are robustly and rigorously investigated through a quantitative analysis of survey data (i.e. quantitative study 1). However, a mixed methods evaluation of the above heutagogical hypotheses and the RQ was also conducted for triangulation purposes. Therefore, key qualitative data are analyzed and discussed in relation to the SdL model (see Figure 1) towards the end of this article (i.e. qualitative study 2).

[INSERT FIGURE 1 HERE]

STUDY 1: METHODOLOGY

Combined UBC surveys (2012 and 2015) - *Sampling and data collection*

Working with the organizers of the UBC, an initial on-line survey was administered to 304 teams from 68 UK universities in April 2012. 125 students completed the survey from approximately 1600 possible students (7.8% response rate). A breakdown of descriptive statistics of participant gender, degree/subject discipline, and extent of progression in the competition is captured in the Results section. A repeat survey (replicating the same measures and procedure) was conducted in April 2015. 119 responses were obtained in Survey Monkey. However, only 114 survey responses were used (due to missing values), leaving a response rate of 6.7%. Repeated cross-sectional surveys are often used in an attempt to replicate initial research and establish confirmatory models (Kline 2011).

The UBC research team originally intended to carry out a repeat survey in 2014, but due to unforeseen circumstances, this had to be postponed until 2015. Some studies suggest that conducting covariance-based structured equation modelling (CB-SEM) requires a bare minimum sample size (with an unknown population size) of *n* greater than 100 (Nasser and Wisenbaker 2003, 754[3]). As the combined sample size for both 2012 and 2015 students was

[3] 2nd generation CB-SEM approaches in packages such as AMOS are now widely used for CFA measurement and structural modelling purposes. They are preferential over 1st generation statistical

greater than 200, the research team were able to proceed with a confirmatory factor analysis (CFA), model fit and structural analysis in AMOS (Hair, Black, Babin, and Anderson 2010). Invariance tests were also carried out to investigate if the final CFA factor structure was equivalent across both year groups (i.e. 2012 and 2015). Based on Armstrong and Overton (1977), non-response bias tests were also conducted for each survey cohort. There were no significant mean differences between the final/last quartile and the majority of responses for each survey, the assumption being that: *"late respondents are representative of non-respondents"* (Hoffman, Neumann, and Speckbacher 2010, 107).

Survey Measures

Variables were captured using a Likert scale multi-items ranging from *1 – strongly disagree* to *5 – strongly agree*, unless otherwise stated. These were as follows:

Personal/managerial skills – students were asked the extent to which they agreed, or disagreed that the UBC helped to practice and improve key personal and managerial skills (Omerzel and Antončič 2008): (a) influencing skills; (b) leadership skills; (c) planning and organizing; (f) team-working skills.

Reflective learning - drawing on elements of self-reflective practice (van Vuuren *et al.* 2012; 2014), students were asked about the extent to which they agreed, or disagreed that participating on the UBC experience: (a) allowed me to apply my academic learning into practice; (b) made me more confident about my own capabilities; (c) provides learning that complements what is taught in class; (d) meeting companies added value to my learning experience.

UBC employability impact – students were asked to reflect and consider a number of potential employability benefits (van Vuuren *et al.* 2012; 2014). In particular, students were asked about the extent to which they agreed that participating on the UBC: (a) is something I will add to my CV as a business experience; (b) is something I will mention in future interviews with

techniques including EFA, variants of ANOVA and linear regression in SPSS. A major advantage of CB-SEM in AMOS is its increased modelling capability. For example, AMOS can be used to assess CFA model fit, as well as compare direct and indirect structural pathway effects (and associated parameters) simultaneously.

employers; (c) has helped me understand what career I would like to pursue; (d) has improved my chances of finding a job.

Round reached **-** indicates a progression in the UBC. If teams are successful, they progress to the semi-final (Round 2), and the grand-final (Round 3) respectively.

Controls

Participant Age and ***Gender.*** These were not essential to the learning theory proposed, yet were potentially confounding variables in the overall model.

Confirmatory factor analysis (CFA)

Factor analysis is normally conducted as a precursor to multivariate regression testing and/or the structural modelling of survey-based data. A CFA measurement model using CB-SEM is first used to verify the underlying factor structure of unobserved, or *latent* (hidden) variables. Whilst not directly measurable, latent factor variables (or SEM derived constructs) can be inferred after a covariance-based investigation of individual survey items as theorized observable indicators. The underlying factor structure, including the dimensionality, reliability and validity of latent variables/constructs can also be modelled through a series of related tests (see below). The *a priori* nature of CFA modelling is different to exploratory factor analysis (EFA) approaches, whereby the underlying dimensionality of each latent variable is not normally known, nor previously theorized. In this sense, CFA measurement modelling is considered more robust than traditional EFA approaches, which is why it was used in this research.

To enable CFA, a maximum likelihood analysis was conducted in AMOS (version 22) to test alternative CFA hypothesized factor models, establish goodness-of-fit (GoF) statistics, and assess overall model validity (convergent and discriminant).

[INSERT TABLE 1 HERE]

In comparison with possible competing CFA measurement models, a three-factor latent factor model provided best overall fit (see Table 2): (χ2= 53, p<.001; CMIN/DF = 1.765; RMSEA = 0.060; SRMR = 0.0523; GFI = 0.952; AGFI = 0.912; CFI = 0.976; TLI =0.954). Alternative

factor models were also investigated using common goodness-of-fit (GoF) statistics (see Table 2): (a) a single/one-factor model; (b) a two-factor model (combining personal/managerial skills and reflective learning capacity, along with employability impact); (c) a three-factor model (personal/managerial skills, reflective learning capacity and employability impact).

Common method variance

A common latent factor (CLF) was added to the three-factor model in AMOS suggesting only 15% common variance. Common method variance was also tested for at variable level by comparing standardized regression weights with and without the CLF variable (Podsakoff MacKenzie, Lee, and Podsakoff 2003). As there were no comparative differences greater than 0.2, no further action was required regarding common method bias.

Invariance testing (configural and metric)

As the above CFA modelling is based on a combined analysis of both the 2012 (n = 99) and 2015 (n = 114) cohorts of UBC participants, it is useful to test for configural multi-group model invariance. In other words, it can be inferred from Table 2 (see bottom row for summary of GoF results) that the measurement model applies equally well to both the 2012 and 2015 sampled data, thus strengthening the case for a plausible final CFA measurement model (Hair *et al.* 2010). This was followed-up with a (metric) Chi-Square difference test, which investigated if there was a statistical difference between the unconstrained ($\chi 2$ = 97.1, df = 60) and the fully constrained multi-group factorial model ($\chi 2$ = 109.7, df = 70, p = 0.247). Results suggest no statistical difference(s) between the 2012 and 2015 sampled data. Therefore, the CFA measurement model can reasonably be referred to as *invariant*, within the context of Study 1.

[INSERT TABLE 2 HERE]

The final three-factor construct reliability results were also deemed satisfactory in terms of composite reliability (CR) scores > 0.75 (see Table 1). Table 3[4] demonstrates satisfactory

[4] Table 2 was developed from http://statwiki.kolobkreations.com/wiki/Main_Page

convergent validity in the three-factor model using the Fornell and Larcker (1981) criteria, with all average variance extracted scores (AVE's) >0.5. In addition, Table 3 shows that maximum shared variance (MSV) < AVE, and average shared variance (ASV) < AVE for all three latent factor variables, thereby demonstrating acceptable discriminant validity.

[INSERT TABLE 3 HERE]

Taking the above model fit results into account, the three-factor CFA measurement model was deemed the most plausible for further structural modelling (Hair *et al.* 2010).

STUDY 1: QUANTITATIVE RESULTS

Descriptives

By combining data from the 2012 and 2015 surveys, a CFA (see previous section) followed by structural path analysis was carried out. 59 UK registered universities were part of that combined sample (n = 213); 51.6% of respondents were male, and 48.4% female. The highest average age of number of respondents (52.6%) was between 21-22 years old, 17.4% of respondents were aged 20 years or below, and 13.6% were over 25 years. Year 1 students = 13.6%; Year 2 students = 42.7%; Year's 3 & 4 = 43.7%. Business, finance and economic related participants accounted for most survey responses (75.8%), reflecting that as a business simulation, it is business (and related) degree students who are most likely to participate. Interestingly, the percentage of students that self-reported participation on other simulation initiatives was low, i.e. under 15% (e.g. *European Business Masters Cup, Young Enterprise, FLUX, Student Investor Challenge*, and various sector initiatives organized by accountancy, consultancy and marketing firms/ associations).

Regarding round progression in the UBC competition, 43.7% of participants completed the first round only, with 56.3% reaching the latter semi-final and grand-final stages (N.B. just 11.7% of participants reached the grand-final).

Analytical strategy

To run multi-group moderation results effectively in AMOS, roughly equal sized groups were needed for comparison purposes. Therefore, path effects from round 1 participants were

compared with round 2 and round 3 participants combined, i.e. semi-finalists and grand-finalists.

H1a is supported; H1b is not supported. Figure 2 employs a comparative path analysis approach, using iterative multi-group moderation. Firstly, standardardized path effects for 1st round participants (internet simulation only), as well as rounds 2 & 3 (face-to-face participation in live events) provide support for H1a. In other words, reproducible personal/managerial skills and reflective learning capacity were found to be statistically significant for more than one round of the UBC. Secondly, critical ratio/difference tests were conducted as part of a follow-up moderation analysis, although there were no statistically critical differences to report and thus, H1b is not supported. This means that whilst path results for personal/managerial skills and reflective learning capacity were clearly reproducible, there were no critical path effect differences between internet only part of the UBC simulation (i.e. round 1), and the semi or grand-final (rounds 2 & 3). The theoretical implications of H1(a,b) are highlighted later during the Discussion section of the article. Finally, results from Figure 2 are also useful, because they helped to support a H2 mediator role for *reflective learner capacity* during different rounds of the competition on the indirect pathway, i.e. '***Personal/Managerial Skills -> Reflective Learning Capacity ->Employability Impact'*** (see Figure 2).

[INSERT FIGURE 2 HERE]

H2 is supported. Results from Table 4 clearly demonstrate support for H2, i.e. a *full mediation* role for reflective learning capacity in the model. A full mediation result suggests a statistically significant indirect path relationship, i.e. '***Personal/Managerial Skills -> Reflective Learning Capacity ->Employability Impact'***, along with a non-significant direct path relationship, i.e. ***'Personal/Managerial Skills ->Employability Impact'*** (Frazier, Tix, and Barron 2004). Put simply, the combined *a*b* effect (see Table 4) demonstrates that personal skills development (IV), in the presence of reflective learning capacity as mediator (MV), has a much stronger indirect effect on UBC employability impact (DV), than the now not significant (n.s.) direct *c'* path[5] (Baron and Kenny 1986; Frazier *et al.* 2004). The implications

[5] Mediation analysis in Table 4 firstly incorporates all 4 steps of the Baron and Kenny (1986) approach, followed by a bootstrapping analysis to verify the indirect effect/path (Frazier *et al.* 2004, 125-126).

of this full mediation result for H2, along with reflective learning capacity as a mediating variable, are discussed later in the article.

[INSERT TABLE 4 HERE]

The above Study 1 measurement modelling and structural path results have been presented first, to provide reliable and robust statistical analysis in relation to H1 and H2. Study 2 explores the research question (RQ) further from a qualitative perspective. This helps to identify key themes and reasons that might explain and contextualize the self-determined learning (SdL) modelling results in greater detail.

STUDY 2: METHODOLOGY

Qualitative focus groups and interviews – *sampling and data collection*

Four separate focus groups (FGs) were conducted with student teams from (April 2012 to May 2012). The focus groups were designed to triangulate against initial survey results and to probe personal skills development, experiential learning and employability issues further.[6] All focus groups (4-6 student members per group) lasted between 55 minutes to 1.5 hours (Wolff, Knodel, and Sittitrai 1993; Yin 2009). Researchers also attempted to capture different learner viewpoints, based on their progression in the competition. One focus group team had progressed to the final, two teams reached the semi-final and the remaining team didn't get passed the first round of the competition. Key focus group questions included: *[Q1. Why did you take part in UBC? – what were your main reasons? Q2. On reflection, what did you feel you got out of the UBC experience in terms of your personal skills development? Q3. How has participating in the UBC complemented your overall learning to-date? Q4. How, (if at all) has participating in the UBC helped with your employability prospects?]* All focus groups were recorded and transcripts analyzed by researchers using an open, axial and selective coding system. In this way, a range of themes and subthemes could be identified from within and across focus group data (Wolff *et al.* 1993; Yin 2009). Three additional student team focus

[6]Additional focus group research (complementing the survey) was developed in conjunction with guidance from Wolff *et al*. (1993).

group interviews were conducted during the semi-final stages in 2015, using the same focus group protocol.

A further fifteen recorded semi-structured UBC student interviews were conducted between February-May 2017, using the same questions and general lines of enquiry. On average, individual student interviews lasted between 30-45 minutes, with an approximately equal male-female split. Similar to the 2012 focus groups, a maximum variation sampling technique was employed to gather a more diverse range of views and opinions, i.e. involving students from all rounds/stages of the UBC. A similar thematic data analysis and coding system was also adopted, in line with the earlier focus group procedures. Given current journal article word limits, only key/dominant themes were presented and discussed in relation to the self-determined learning (SdL) model and associated literature. There were also various informal discussions with UBC facilitators and mentors during the same period which are referred to, but not highlighted in great detail. Student focus groups and semi-structured interviews helped to triangulate data sources, as well as facilitate a more in-depth understanding of personal/graduate skills development and self-determined learning within the UBC case setting.

Analytical (qualitative) strategy

Focus groups and personal interview analysis complemented survey results by exploring the central RQ and self-determined learning (SdL) model in a more in-depth/rounded way. For example, it was important to understand why students might want to join the UBC in the first place, shedding light on learner motivations and what they gained from participating. Researchers also tried to explore what reflective learning capacity meant through an analysis of learner reflections. Finally, it is important to be critical from a heutagogical perspective and consider what might, or could have been done differently, i.e. identifying lessons for learners, educators and future practice.

STUDY 2: QUALITATIVE ANALYSIS

Reasons for taking part in the UBC business simulation

For most student focus groups and those interviewed, there was a clear sense of personal advantage in terms of potential employability impact. There was also the accompanying expectation of improving one's personal skills and career self-efficacy. Being able to demonstrate personal skills mastery, along with confidently approaching future job interviews were important benefits, for example:

> *"because it gives me confidence in going into a job and assessment centres and stuff, that I do have the skills I need to get a job really."* (FG4, 2012)

Many students first heard about the UBC through email or an announcement from their lecturers or tutors, and so from a motivational perspective, there was an element of tutor prompting and flagging awareness of the simulation. Whilst some were eager to form groups straightaway, others mulled over their decision to participate. It took time for some students to get their: *"head around the idea"* (FG3, 2012), which involved consulting with staff, or peers and generally taking some time to reflect and consider. So, to suggest that all participants were fully aware and eager from the outset would be misleading. As one informant noted:

> *"I didn't really know a lot about the programme to be fair. I did it more for my CV - I'm not going to lie - more than anything. I didn't really [think about it] at first, and I actually work for XXX at the moment; so it was in collaboration with them, so it's a good opportunity to combine the two what I'm doing this year."* (FG1, 2015)

It is widely known from the social cognition and career-goal directed literatures (e.g. Bandura 2001; 2002; Pegg *et al.* 2012), and self-determination theory (e.g. Deci and Ryan 2000)[7] that cognitive motives can be influenced by: (a) the innate need(s) to develop new personal skills and freely share ideas through team activities, and/or; (b) the career-focused goal of evidencing one's CV, for stronger employability impact. It is also known that many students joined the UBC: *"for the fun of meeting others and, well it's a new... interesting thing to do"* (Interviewee 5, 2017). Interestingly, several participants who initially joined for fun reasons, found themselves becoming more immersed and engaged as the simulation progressed. There was also clear evidence of motives becoming more instrumental and goal oriented, as

[7] N.B. Deci and Ryan's (2000) self-determination theory (i.e. the innate psychological needs for developing personal competence, relative autonomy and in this case UBC team relatedness) is not the same concept as self-determined learning (heutagogy). However, the former is useful for helping us to understand the motivations for self-directed learners.

teams tasted success in the 2nd round. For some, the transition to the live events initially appeared daunting, followed by a sense of excitement and optimism. Basically, as some teams realized they could compete more effectively during the face-to-face events (i.e. 2nd and 3rd rounds), their levels of commitment and motivation to succeed increased. The *'we can do it'* team efficacy theme was very prevalent during student focus groups, compared with individual interviews.

For other students, the UBC married skills first learned in the HE classroom, with opportunities for reflective learning through simulated practice:

> "*I think the stuff I learnt at Uni…. I feel like this enabled me to bring the skills that I've learnt at University [and like the pointing system], I think establishes if the way I use my skills is correct or not, and I feel like I joined to attend this because I want to see how great my creativity is."* (FG2, 2015)

In terms of the SdL model (see Figures 1 & 2), there is qualitative evidence to support aspects of reflective learning capacity. However, in getting to the heart of what reflective learning really meant for UBC participants, researchers found that simulating the real world was the dominant theme.

Simulated *'real world'* business learning

Firstly, many informants were immediately cognisant of the real world element as a key benefit of participating in the UBC business simulation. For some, the UBC experience mimicked the look and feel of a professional work-place:

> *"I mean it's not just business skills, it's more if you work in a workplace it looks like… it resembles a lot of like team working and like just being professional. So, it gives you some professionalism because you have to get out there and network with people, which was also another important thing."* (Interviewee 10, 2017)

Related to this idea, is the connectivity between theory and practice (Pittaway and Cope 2007). When asked, several informants suggested the UBC helped translate theory into practice, in relation to their simulated business scenarios:

"It takes it one step further beyond the academic theory, because academic theory is very good at modelling and giving you ideas, but being able to actually implement that practically, you need the decisions, that's [what] we're doing at the moment through the simulations and everything, to be able to put that into practice."

(FG1, 2015)

In addition to learner reflections about the real world look and feel of the UBC, some Year 1 and 2 students noticed a feedback loop that linked back to HE class-room assessments. This was associated with a growth in learner self-confidence and a sense of progression in their academic studies:

"In the semi-final it was my first time to pitch in front of like 80, 90 people, it gave me loads of courage and experience. Additionally, yeah sure like literally I'm at the moment studying for an accounting and finance exam and yeah, it helped me with this as well, because in the first round we had like, yeah we [the team] had to calculate… so many different aspects." (Interviewee 4, 2017)

Practical implications - *A heutagogical critique*

From a heutagogical perspective, there are various issues to consider. Some participants would have liked more stretch from the organizers, to develop their personal competency in fresh situations. For example, some were critical that elements of the live events were a little too predictable at times, and there was a clear message for the UBC organizers:

"Make it slightly harder in the semi-finals…..And maybe do a round as well in terms of mixing all the groups up just to see how you actually react in an environment with people you completely are unknown to." (FG1, 2015)

Self-determined learners relish additional real world complexity within simulations, to test and develop their personal competences further. The UBC organizers have responded to this criticism by moving away from a purely financial focus in round 1 of the competition, to a wider set of business drivers, such as ethics and sustainability in rounds 2 and 3.

Secondly, in terms of an overall student-centred learning design, the UBC simulation/activities brief and timetable were controlled by the UBC organizers (UBC, 2018a).

Therefore, self-determined learning (SdL) was necessarily restrictive, at least to some extent. Nevertheless, UBC organizers' involvement had always been kept to a minimum throughout: initially, by setting the scene for the business case (i.e. at the outset of the competition) and then; only through providing environmental and key updates, where appropriate. The interpretation of all business data and subsequent decision-making was entirely at the behest of competing student teams. The impact of team decision-making on UBC performance and assessment was also controlled by student teams, i.e. as opposed to the organizers. So, in this sense, all results and outcomes were entirely learner influenced.

Finally, there were wider concerns raised by both learners and facilitators, namely: (a) some inter-university business simulations are increasingly expensive from an institutional perspective; (b) there is an onus on enterprise/simulation educators to keep learning content and activities relevant, and; (c) to allow even more self-direction and team control of activities, which may not always be easy. A key practical implication is, if 21st century experiential learners are being encouraged to become more self-determined, then, there should be a similar message for educators and providers, i.e. to make their simulations even more novel and challenging.

DISCUSSION

Whilst there are many precedents for the study of heutagogy in e-learning, as well as social and digital media environments (Blaschke 2013; 2018; Eberle 2009; Hase and Kenyon 2000), this is one of the first empirical studies to combine self-determined learning skills and graduate employability within a business simulation context. In this sense, the current article contributes to new knowledge about heutagogy for business simulations and graduate skills development more generally.

Firstly, in terms of developing personal/managerial skills for employability, H1 and H2 survey results indicated that UBC participants for the most part, acted as motivated learners. While some participants were highly motivated from the outset of the competition, others only became aware of their personal skills development and UBC employability benefits as the simulation experience progressed. This implies that cognitive thinking for some experiential learners takes time to develop (Fearon *et al.* 2018; Loon *et al.* 2015 for similar arguments). For example, Loon *et al.* (2015, 4) discussed how it can take some time for a coherent learning

"story" to emerge, whereby, learners eventually visualize how simulated management concepts and business scenarios work in real life. Loon *et al.* (2015, 5) examined how this "*maturity in thinking"* occurs, as learners pass through subsequent stages of their business simulation activity, thus enabling sufficient time for learners to properly reflect upon their experiences, and experiment with new ideas and concepts (see also Kolb *et al.* 2001). There were no perceptible, or statistically critical differences between UBC learners who only completed round 1 (i.e. the internet-only part of the simulation) and those who progressed to the latter rounds of the Challenge (i.e. involving face-to-face engagement). This finding, of itself, doesn't negate core SdL *'personal skills ->competence ->capability'* learner development claims (Blaschke 2012, 59-60). Instead, it can be concluded that initial positive path effects were indeed reproducible, but with no marked, or dramatic improvements (i.e. supportive of H1a, but not H1b). This is indicative of a slow and steady learner development pattern. There was also ample qualitative evidence of personal/managerial skills and transformative learner development throughout the competition.

Secondly, reflective learning capacity was investigated through combined survey and qualitative analysis. UBC participants were demonstrably aware of their own learning, for example: (a) making links between academic theory and simulated practice; (b) a personal growth realisation in terms of skills and capabilities, and; (c) complementing and reinforcing what was learned in class (Hollman 2000; Pittaway and Cope 2007). H2 results were useful in terms of the hypothesized mediating role of reflective learning capacity (Cathro *et al.* 2017; Kolb *et al.* 2001). A full mediation result supports literature assertions that personal reflection is a core fundament of self-determined learning (Blaschke 2012; Blaschke and Hase 2016). In addition, similar to others (e.g. van Vuuren *et al.* 2014; Loon *et al.* 2015), it is suggested the ability to mimic real world professional practice acts as an important catalyst for personal learner reflection. Reflective learning capacity can be useful in a personal developmental sense, because it creates psychological space for *liminal thinking* (McCartney *et al.* 2009; Meyer and Land 2005)[8]. Arguably, the UBC simulation allows self-determined learners to become more self-aware of their own personal skills gaps, and identify where personal learner transformation(s) may be needed for stronger employability impact.

[8] McCartney *et al.* (2009, 383) succinctly defined *liminal space* as: *"the transitional period between beginning to learn a concept and fully mastering it". Liminal thinking* refers to UBC experiential learners juxtaposed on the cusp of mastering new skills and knowledge for future career success, accompanied with a self-awareness of personal skills and learning gaps associated with real world business practice.

Artess *et al.* (2017, 30) in their recent Higher Education Academy (HEA) review of employability literature from 2012-2016, essentially agreed with these viewpoints. In particular, they highlighted a central role for personal reflection, to help transform HE student learning, personal attributes and graduate skills for the modern workplace. However, Artess *et al.* went a step further and, referring to Eden (2014), suggested that personal employability research would be much better understood, if student learners were considered to be in the: "*process of becoming employable*" (cited in Artess *et al.* 2017, 31). This refers to a whole-person journey in which experiential learners are asked to personally reflect about their expectations before participating, as well as during, and after experiential learning events have occurred. Artess *et al.* (2017) argued that reflective learning, or what Rust (2016) referred to as personal literacy (i.e. the ability to read oneself) is vital for promoting employability impact. Artess *et al.* (2017) surmised that learners who aren't able to personally reflect or clearly articulate their personal strengths and weaknesses [whilst at university, for example] cannot be considered: *"fully employable"* (31).

Finally, in this new era of experiential learning, it is purported that heutagogical principles should help to underpin a stronger theoretical understanding of how and why graduates take responsibility for their own career development. The Chartered Association of Business Schools for example, suggest that building more practice into the curriculum is an important step, and that new forms of experiential learning is: *"one of the few clear factors which help a student's employability, both in a developmental and labour market transition sense"* CABS (2015, 7). As this is one of the first business simulation and graduate employability studies to be underpinned by self-determined learning (SdL) principles, it will hopefully act as a signpost for future empirical researchers (see the next section/final paragraph for some ideas).

CONCLUDING REMARKS

Limitations and future research

Regrettably, other inter-university simulations were not researched (e.g. FLUX, Student Investor Challenge etc). So, while the statistical methods and approach used in this UBC study were sufficiently robust and rigorous for structural modelling purposes, the results cannot not

be considered generalizable to all inter-university business simulations. Other limitations included, not being able to examine the demand side of employability and skills development (e.g. Hinchliffe and Jolly 2011; Tomlinson 2017). In other words, the research team didn't formally investigate what UK employers might think of personal/managerial skills development and simulated learning programmes. Alas, whilst this option was considered, it was just going to be too difficult to execute properly as a concurrent research investigation.

However, assessing employer and labour market expectations of key graduate skills could be a future research possibility, perhaps involving a mixed methods (research) approach and analyses of publically available data. In terms of *'what next?'*, arguably self-determined learning offers a valuable theory base for wider employability research, including for example, work-place learning and UK apprenticeship degrees. Therefore, these will also be explored as possible avenues for future research.

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Figure 1. UBC self-determined learning (SdL) model

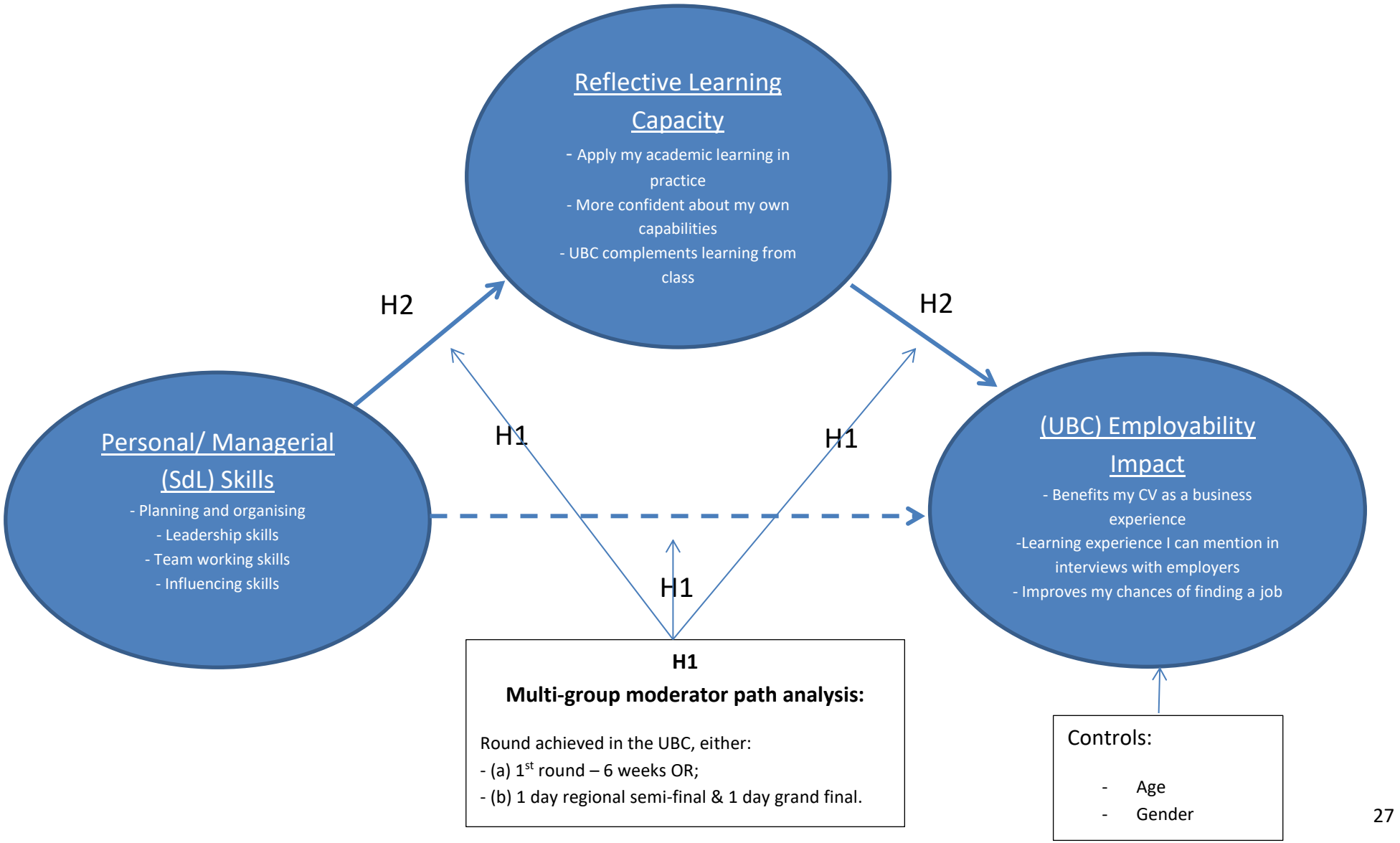
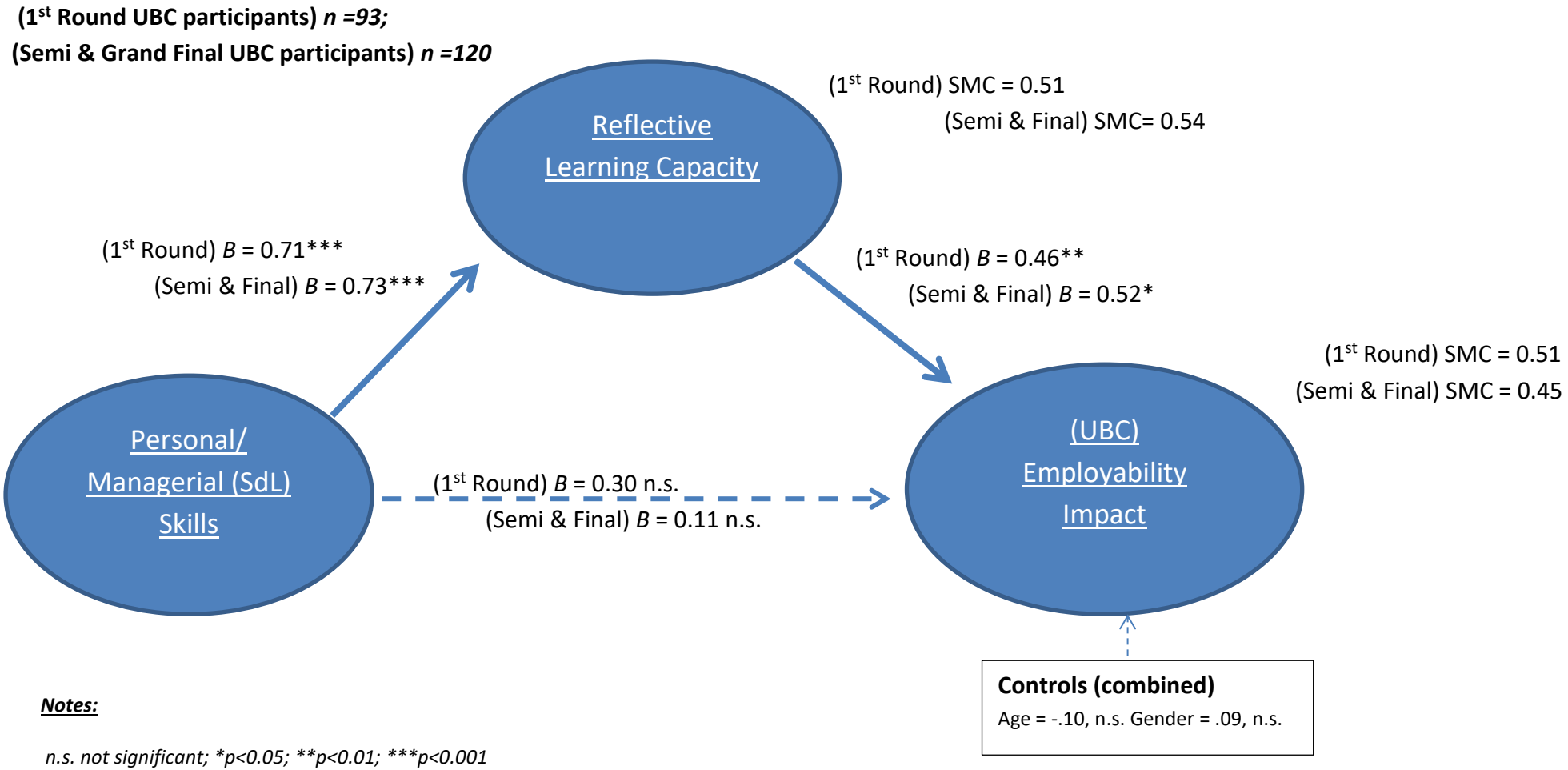


Figure 2. Path effects at different rounds of the business simulation



Notes:

*n.s. not significant; *p<0.05; **p<0.01; ***p<0.001*

SMC's = Squared multiple correlation values

Structural model fit statistics: $\chi 2$= 142, p<.01; CMIN/DF = 1.450; RMSEA = 0.046; GFI = 0.905; AGFI = 0.849; CFI = 0.953; TLI =0.936

Table 1. Confirmatory factor analysis (CFA)

	Mean	STDEV	Comp. Rel. Scores	CFA loadings
Personal/Managerial (SdL) Skills α.81			CR .83	
improved my influencing skills	3.99	.780		**.64**
improved my leadership skills	4.00	.866		**.71**
improved my planning and organising skills	4.19	.754		**.80**
improved my team working skills	4.42	.727		**.79**
(UBC) Employability Impact α.82			CR .85	
is something I will add to my CV as a business experience	4.50	.718		**.83**
is something I will mention in future interviews with employers	4.43	.801		**.91**
has improved my chances of finding a job	3.56	1.011		**.68**
Reflective Learning Capacity α.75			CR .78	
allowed me to apply my academic learning into practice	3.92	1.009		**.63**
made me more confident about my own capabilities	4.02	.885		**.91**
UBC provides learning that complements what is taught in class	3.92	.929		**.64**

Table 2. Alternative CFA factor models (GoF)

	$\chi 2$ (*p<.001)*	CMIN/DF	RMSEA	SRMR	GFI	AGFI	CFI	TLI
1 factor	331	5.342	0.143	0.0892	0.795	0.699	0.803	0.752
2 factor	106	3.333	0.105	0.0679	0.815	0.829	0.922	0.891
Final 3 factor model	53	1.765	0.060	0.0523	0.952	0.912	0.976	0.964
Invariance results for 3 factor CFA model - based on 2012 and 2015 samples	97	1.619	0.054	0.0660	0.920	0.853	0.962	0.943

Table 3. Analysis of variance for convergent and discriminant validity

	AVE	MSV	ASV	Personal/ M. (SdL) Skills	Employability Impact	Reflective Learning Capacity
Personal/Managerial (SdL) Skills	0.548	0.543	0.451	0.740		
Employability Impact	0.664	0.464	0.411	0.599	0.815	
Reflective Learning Capacity	0.546	0.543	0.503	0.737	0.681	0.739

Table 4. Mediation analysis

IV->MV->DV Comparative path model relationships	***a path***	***b path***	***combined a*b path***	***c path*** **Total effect (without mediator)**	***c' path*** **Direct effect (with mediator)**	**Causal steps method**	**Quantifying indirect effect via Bootstrapping (bias corrected percentile method)**	**Interpretation**
(IV) Personal/M. Skills **->** (MV) Reflective Learning Capacity **->** (DV) UBC Employability Impact	*β*=0.736 (*p*=.000) s.e. =0.104	*β*=0.550 (*p*=.000) s.e. =0.177	*Indirect effect = 0.405*	*β*=0.586 (*p*=.000) s.e.= 0.097	*β*=0.181 (*p*=.121; n.s.) s.e. =0.141	Full mediation	Boot =0.489 (*p*=.000) LLCI=0.220 UCLI =0.906	H1 - Indirect/ mediated effect result supported by bootstrapping