Exploring Student's Perceptions on Psychological Empowerment by Using a Business Simulation

Dr Nuno Arroteia, De Monfort University,nuno.paulinoarroteia@dmu.ac.uk

Dr Alex Avramenko, Abertay University, avramenko@hotmail.com

Professor Khalid Hafeez, De Monfort University, khalid.hafeez@dmu.ac.uk

Abstract

This paper introduces a study exploring the impact of computerised business simulations on student's perceptions about their psychological empowerment. The research is focused on undergraduate business students in a Higher Education institution in the UK. Psychological empowerment is an acknowledged determinant of student engagement in the learning process. A survey-based instrument was designed and administered to students studying different business modules. The survey data was analysed using descriptive statistics. Subsequently, semi-structured interviews were conducted to verify the empirical findings. The results indicate a significant and positive impact of simulation-based pedagogy on intrapersonal, interactional and behavioural dimensions of student's psychological empowerment. Furthermore, our findings also suggest that these sub-constructs are interconnected. We have also found a positive trend in student academic attainment assisted by the use of computer-based business simulations. These results encourage business and enterprise tutors in Higher Education to embed simulation-backed pedagogies in the teaching and learning process as a means of advancing student learning and experience.

Keywords: psychological empowerment, higher education, business simulation, learning experience.

Introduction

Business Schools across Higher Education (HE) globally face growing pressure to adopt innovative pedagogic approaches that successfully connect theory with practice (Klein & Riordan, 2011; Rossatto & Dickerson, 2019; Treleaven & Voola, 2008) and develop the skills that are in high demand by employers (Paul & Mukhopadhyay, 2005; Yu et al., 2005). A high level of complexity in today's business environment dictates a need to prepare students to make decisions and cope with volatility, uncertainty, complexity and ambiguity in a fast-changing environment across the political, economic and sociocultural spectrum (Bennet & Lemoine, 2013; George, 2003; Sternad, 2015). In this respect, experiential learning has gained strong acceptance among educators in HE as providing a positive contribution to students' learning journeys and their capacity to address the aforementioned challenges more effectively (Blicker, 2005; Brodie & Irving, 2007; Luthans & Doh, 2012; Phatak et al., 2005; Pfeffer & Fong, 2002).

Technologies and particularly computer-based simulations are a preeminent example of this (Anderson & Lawton, 2009; Doyle & Brown, 2000; Prensky, 2001; Yasin & Hafeez, 2018). Even though the literature has addressed the impact of computer-based simulations in the classroom extensively, it has mostly addressed the effects on students' discrete competencies (e.g. cognitive, behavioural, social) (Avramenko, 2012; Buil et al., 2018, 2019; Ceschi et al., 2013; Gosen & Washbush, 2004; McLoughlin & Lee, 2007; Pittaway & Cope, 2007; Reese et al., 2015; Reynolds & Vince, 2004; Vogel et al., 2006; Xu & Yang, 2010). We suggest that the use of a more holistic perspective could bring further insights into the way and extent to which these technologies have an impact on students' competencies. To perform competently in the workplace, business students need to develop a range of cognitive (Ashley et al., 2016) and behavioural skills (Johnson et al., 2006; Milhauser & Rahschulte, 2010), to be able to solve complex problems and to make both intuitive and analytical decisions while working in teams. Therefore, it is important to acquire more than subject-specific knowledge; to better comprehend the broader context in relation to the human, environmental and social factors which graduates will encounter when managing a business (Beetham & Sharpe 2013; Koris et al., 2017).

This research addresses this gap by adopting the theoretical lens of Psychological Empowerment (PE) (Spreitzer, 1995; Zimmerman & Rappaport, 1988) to investigate the way and extent to which the use of computer-based simulations has impact on students' intrapersonal, interactional and behavioural competencies. Student's psychological empowerment is also a determinant of student's engagement in their learning journey (Bradbury-Jones et al., 2007; Dimick, 2012; Hassi & Laursen, 2015; Kennedy et al., 2015; You, 2016). To the best of our knowledge, this is the first time that a paper has adopted the lens of PE to study the impact of business simulation pedagogy in HE. Moreover, student psychological empowerment is acknowledged as a key aspect associated with the quality of HE, therefore, there is a push for changes within institutions to encourage student transformation (Cheng, 2016; Harvey & Green, 1993).

The aim of this research is to support professionals teaching business and enterprise subjects in HE in their evaluation of the adoption of technologies and particularly computer-based simulations in the classroom. The lens of PE also provides an addi-

tional measurement complementing other indicators being used in HE (e.g. grades and student satisfaction) and facilitates a better understanding of the way and extent to which existing courses are performing in meeting the students' and, most importantly, their employers' expectations.

This research initially adopts a survey-based instrument to capture the perceptions of business and management students in a UK business school after experiencing a computer-based simulation in the classroom. Semi-structured interviews have been used to seek a better understanding of student perception and their experience of using the business simulation. The paper also presents observations on student grades to aid understanding of the impact of the simulation beyond the perceived psychological empowerment (Finn & Zimmer, 2012; Kirk et al. 2017; Nelson, 2018).

The paper begins with a literature review on the effects of computer-based simulations and psychological empowerment in HE, this was used to aid the formulation of the research questions. It proceeds with substantiating the research design and its implementation. At the end of the paper, the results are presented and discussed, conclusions are drawn and reflections made on the research limitations and opportunities for further research.

Literature review

Impact of computer-based simulations on students' competencies

The literature has addressed the impact of computer-based simulations in the classroom by focusing primarily on its benefits towards improving student's discrete competencies (Anderson, 2005; Doyle & Brown, 2000; Prensky, 2001; Reese & Tabachnick, 2015; Shellman & Turan, 2006; Washbush & Gosen, 2001; Yasin and Hafeez, 2018). In simulations, actual scenarios tend to mirror real-life context and simulation's participants have to make real-time decisions, reflect on and learn from the interim outcomes in order to improve their decision-making capacity (Anderson and Lawton, 2009; Doyle and Brown, 2000; Reese & Tabachnick, 2015; Reynolds & Vince, 2004; Xu & Yang, 2010).

Previous studies have identified positive impact of business simulations on student's cognitive skills, motivation to learn (Randel et al., 1992; Vogel et al., 2006), reflective abilities, critical thinking and self-control (Pittaway & Cope, 2007; Reese et al., 2015; Reynolds & Vince, 2004; Xu & Yang, 2010). Other streams of research have looked at the positive impact of simulation pedagogy on student behaviours and the advancement of their problem-solving and decision-making skills in the situations characterised by elevated risks and uncertainty (Anderson & Lawton, 2009; Faria, 1998; Gosen & Washbush, 2004; Wellington & Faria, 1991). On the other hand, students social skills have also been found to be improved by simulations, as working in diverse teams facilitates building connectivity and team-based learning through collective discovery, information sharing, and participative decision-making (Avramenko, 2012; Ceschi et al., 2013; McLoughlin and Lee, 2007; Reese et al., 2015; Reese & Tabachnick, 2015).

Yasin and Hafeez (2018) noted that the focused use of computer-based simulations in classroom can benefit holistically student social, behavioural and social compe-

tencies as well as their psychological engagement with the studied subject. Therefore, the following section reviews the theoretical lens of Psychological Empowerment (Spreitzer, 1995; Zimmerman & Rappaport, 1988) aiming to rationalise attainment of competencies by students in a rather holistic manner.

Psychological Empowerment

Earlier research on psychological empowerment (PE) in the educational environment was introduced by Frymier et al. (1996), who coined the term learners' empowerment. Subsequently, it attracted increasing attention from various academic disciplines, such as mathematics (Hassi & Laursen, 2015), counselling (McWhirter, 1998), social work (Huff & Johnson, 1998), nursing (Bradbury-Jones et al., 2007; Kennedy et al., 2015), science education (Dimick, 2012) and adventure education (Sibthorp & Arthur-Banning, 2004) However, psychological empowerment has gained less attention in the social sciences and particularly in business and management education.

Empowerment is a psychological state which is mutable, dynamic and is achieved as an outcome of an empowering process (Frymier et al., 1996; Hart et al., 2007; Houser & Frymier, 2009). It is divided into three sub-constructs which when combined determine the degree of empowerment an individual perceives in a given setting and at a given moment. The first sub-construct is intrapersonal which refers to how people think about themselves and includes motivation, perceived competence and perceived ability to make decisions that affect one's life (Zimmerman, 1995; Spreitzer, 1995). Competence relates to self-efficacy, which is an individual's belief about their ability to perform a given task in order to achieve the desired outcome (Bandura, 1977; Sherer et al., 1982). In this sense, empowerment embeds a sense of personal agency characterised by active self-reflection and self-regulation (Deci and Ryan, 2002). The second sub-construct is interactional; it is linked to the way people use their analytical skills and cognitive abilities to analyse, understand, learn and manage the resources at their disposal (Thomas & Velthouse, 1990; Spreitzer, 1995; Hassi & Laursen, 2015). The third sub-construct is behavioural. It relates to an individual's own efforts in making decisions to change their environment through an enactment process (Zimmerman & Warschausky, 1998). Individuals exert their power on others through social participation, interaction and influence (Speer & Hughey, 1995; Zimmerman, 1995, 2000). Table 1 summarises the most relevant research studies that have been conducted in relation to psychological empowerment in educational contexts.

Empowered students are more able to manage challenges and opportunities presented to them, improve their ability to take control of situations, make informed choices and push for changes in their own lives (Hassi & Laursen, 2015; Mcwhirter, 1998; Rogers et al., 1997; Sibthorp & Arthur-Banning, 2004; Sibthorp et al., 2007). Moreover, they develop stronger cognitive abilities, maintain more interest and autonomy in learning, and accrue resilience, flexibility, creativity, and enhanced critical thinking (Houser & Frymier, 2009; You, 2016). Empowered students also develop social competencies such as trust and willingness to collaborate with their peers (Brunson & Vogt, 1996) and demonstrate improved abilities in communicating their own ideas as well as appreciation of the ideas of others (Huff & Johnson, 1998; Sibthorp et al., 2007; Shellman & Ewert, 2010). It has also been noted that these

students engage more with the modules and perform better academically (Cleary & Zimmerman, 2004; Sibthorp et al., 2007; Finn & Zimmer, 2012; Kirk et al., 2017). Furthermore, the importance of student empowerment surpasses the boundaries of academic achievements, as it also helps them to deal with mental health problems (e.g. overcoming feelings of helplessness or loss of control, Spreitzer, 2007), while boosting their careers and employability (Crant, 2000; Fugate et al., 2004).

Therefore, this paper seeks to answer the following questions:

A) To what extent the adoption of computer-based simulations may influence student psychological empowerment?

B) Do students achieve higher levels of academic performance in modules adopting pedagogy utilising computerised business simulation?

Methodology

This study has been conducted in two stages to answer the research questions. Initially, a survey-based instrument was designed and administered to collect data from the students concerning their perception of their psychological empowerment after experiencing the computer-based business simulation. A post-positivist approach (Eisenhardt, 1989) was adopted to design the survey by analysing the literature to identify the variables used for measuring psychological empowerment.

The decision to create a new survey instrument for this research was supported by the limitations found in the literature: the first being that previous survey-instruments captured the student's perceptions in relation to the whole class environment but this research was conducted for the purpose of evaluating perceived psychological empowerment in relation to the computer-based business simulation (which accounted for 50% of the delivery of the module). Moreover, as empowerment is context-specific, no single standard can completely capture its meaning for all people in all situations (Maton & Rappaport, 1984; Zimmerman, 1995; Maton, 2008). The second limitation of the previous survey-instruments is that they captured essentially the intrapersonal elements related to motivation, perceived competence and perceived control (Frymier et al., 1996; Weber et al., 2005; Brooks & Young, 2011) but few of the additional interactional and behavioural aspects which are also addressed in this research (Zimmerman, 1995; Hassi & Laursen, 2015). Other instruments have been employed to ascertain discrete aspects of such constructs as leadership (Sibthorp & Arthur-Banning, 2004), impact on student learning (Frymier et al., 1996; Sibthorp et al., 2007; Hart et al., 2007; Houser & Frymier, 2009; Hassi & Laursen, 2015; You, 2016) and engagement in the classroom (Brooks and Young, 2011; Hassi & Laursen, 2015; Houser & Frymier, 2009; You, 2016).

The second stage of this study involved conducting semi-structured interviews with students, an approach drawing on constructivist philosophy (Peters et al., 2013). Mostly open questions were used to get relevant support, or not, of information collected using the survey concerning student experience of the business simulation undertaken. This was also supported by a review of student voices obtained via reflective accounts of the experience within the business simulation. To ascertain whether or not the adoption of the computer-based simulations had any impact on

students' academic performance in the participating modules, additional data on academic performance was collected over the period of two consecutive years, that is before and after the computer-based business simulation was adopted.

Embedding the Computer-Based Simulations in the Classroom

The business simulation was integrated into two core modules at Stage 3 (BMT301) and Stage 4 (BMT405) of the suite of Business and Management programmes at Dundee Business School in Abertay University during the first semester of the academic year 2017-18. Both modules had different academic orientations; BMT301 follows the syllabus for Operations and Supply Chain Management, while BMT405 is focussed on the Global Competitiveness framework. The software used was the 'Executive' (www.trainingsimulations.com) that allows management of a business entity in the European car manufacturing industry. Both modules were delivered via a set of lectures and tutorials. BMT301 had 109 students registered and BMT405 had 74 students.

The contribution from the computer-based simulation in the delivery of the module was approximately 50% of the whole module. For the delivery of the computer-based simulation, each cohort was divided into tutorial groups of up to 25 students per tutorial, which were further sub-divided into groups of 4 or 5 students acting as the executive level management of the simulated company. In each group, students were assigned specific roles analysing and suggesting decisions in different functional areas of a car manufacturing company (e.g. finance, marketing, R&D, human resources and operations).

The simulation ran for six consecutive rounds in six consecutive weeks (the duration of the modules was 14 weeks), with each week being an equivalent to one year of trading. In each week students attended the lecture where they captured key theoretical concepts, which they tested by making decisions in the simulation. The decision-making activities took place during the tutorial slots, following which the results were processed and made available. Subsequently, students were expected to analyse the results and come up with a new set of decisions in the following week.

At the end of the simulation, students had to make a group presentation covering in depth the process by which they prepared the decisions, applied theory, refined decisions and analysed the results. The presentation was marked as group coursework and accounted for 40% of the final mark in module BMT301 and 50% in module BMT405. The remaining weight of the assessment was covered by examination.

Survey-based instrument

The survey instrument was designed to measure eighteen variables of psychological empowerment. The degree to which respondents agreed with each statement was measured by a five-point Likert-type scale (Jamieson, 2004; Norman, 2010; Brown, 2011): 1 - strongly disagree, 2 – disagree, 3 – neither agree nor disagree, 4 – agree, 5 – strongly agree. Prior to circulating the survey, the instrument was explained to participants in classroom and further guidance was uploaded to Virtual Learning Environment, explaining the purpose of each question and the scale to be used in answering.

Table 1 presents the statements to which students were asked to respond, as well as the literature sources inspiring the design of the survey. The students were invited to complete the survey after the completion of the module and all required assessments.

Table 1 – The observed variables

Nr.	Sub-construct of PE	Variable	Statement	Literature assisting the choice
1	Intrapersonal	Resilience	I improved my resilience while trying to win during the duration of the game	(Hassi & Laursen, 2015; Hart et al., 2007; House & Frymier, 2009; Lord & Hutchinson, 1993; Yasin & Hafeez, 2018; You, 2016)
2	Intrapersonal	Reflective Ability	I enhanced my reflective ability	(Deci & Ryan, 2002; Hassi & Laursen, 2015; House & Frymier, 2009; Lord & Hutchinson, 1993; You, 2016)
3	Intrapersonal	Ability to Work Independently	I improved my ability to work independently	(Hassi & Laursen, 2015; House & Frymier, 2009; Lord & Hutchinson, 1993; You, 2016)
4	Intrapersonal	Creativity	I improved my creativity by dealing with work-related situations	(You, 2016; Hassi & Laursen, 2015; House & Frymier, 2009; Lord & Hutchinson, 1993)
5	Intrapersonal	Risk-Taking	I enhanced my risk-taking ability	Hand to hand to decision making is one's ability to deal with uncertainty and to take risks, as the results cannot be fully anticipated in most of the circumstances (Brunson & Vogt, 1996; Hassi & Laursen, 2015; Huff & Johnson, 1998; Shellman & Ewert, 2010; Sibthorp et al., 2007).
6	Intrapersonal	Uncertainty	I am more able to deal with uncertain situations	
7	Intrapersonal	Decision-Making	I upgraded my decision-making ability	Entails a sense of competence (self-efficacy) by which an individual belief in own's capacity to perform a task to achieve the desired outcome (Bandura, 1977; Frymier et al., 1996; Hassi & Laursen, 2015; Sherer et al., 1992; Sibthorp & Arthur-Banning, 2004; Zimmerman, 1995, 2000), and self-determination (Deci & Ryan, 1985; Schwarzer & Jerusalem, 1995; Spreitzer, 1995).
8	Interactional	Competitive Abilities	I improved my competitive abilities	(Hassi & Laursen, 2015; Houser and Frymier, 2009)
9	Interactional	Motivation for learning	I wanted to know more about the subject	(Brunson & Vogt, 1996; Hassi & Laursen, 2015; Hart et al., 2007; Houser & Frymier, 2009; Lord and Hutchinson, 1993; Sibthorp et al., 2007; You, 2016)
10	Interactional	Understand Business Environment	I have a better understanding of the business environment in a holistic way	(Houser & Frymier, 2009; Spreitzer, 1995; Thomas & Velthouse, 1990; Zimmerman & Warschausky, 1998)
11	Interactional	Understand Problems at	The simulation is a good way of under-	(Spreitzer, 1995; Thomas & Velthouse, 1990; Zimmerman, 1995, 2000)

		hand	standing the problems at hand	
12	Interactional	Understand Complexity by dealing with a real situation	I have a better understanding of the complexity in dealing with a real situation	(You, 2016; Hassi & Laursen, 2015; Houser & Frymier, 2009; Kieffer, 1984; Lord & Hutchinson, 1993; Spreitzer, 1995)
13	Interactional	Appreciate Skills of Team Members	I learned to appreciate the skills that my team members have	(Brunson & Vogt, 1996; Hassi & Laursen, 2015; Huff & Johnson, 1998; Shellman & Ewert, 2010; Sibthorp et al., 2007)
14	Interactional	Learn About Subject	I have read more widely about the subject	(Hassi & Laursen, 2015; Houser & Frymier, 2009; Lord & Hutchinson, 1993; Kieffer, 1984; Weber et al., 2005; You, 2016)
15	Behavioural	Teamwork	I am better prepared to work in a team	As appraising and making use of the resources at their disposal by collaborating with peers and bringing their skills into the decision-making process (Brunson & Vogt, 1996; Hassi & Laursen, 2015; Huff & Johnson, 1998; Shellman & Ewert, 2010; Sibthorp et al., 2007).
16	Behavioural	Influence	I can influence others more effectively	(Hassi & Laursen, 2015; Zimmerman, 1995)
17	Behavioural	Persuasive	I can present better persuasive arguments	
18	Behavioural	Leadership	I improved my leadership ability	(Hassi & Laursen, 2015; Sibthorp & Arthur-Banning, 2004; Zimmerman, 1995)

Ethical approval of the study was obtained from the Ethics Committee of Abertay University prior to commencing the research. The survey was set up on Google Forms and the link to it was distributed by email and was available via a Virtual Learning Environment. Responding to the survey was voluntary and anonymous. No personal information was sought. The responses were exported in formats compatible with the software packages used for the analysis, one being Factor v10.3 XP and the other one - SPSS v 24.

Semi-structured interviews

Semi-structured interviews were conducted with a small sample of six students who volunteered to share their opinions, equally representative of both cohorts. Each interview lasted on average 30 minutes. The interviews were intended to explore the perceptions of the students after experiencing the business simulation and addressed the following areas:

- What aspects of the business simulation were liked or disliked and why?
- What was learnt by experiencing the simulation?
- What has been learned that could be useful in their other current and future academic activities?

The interviews were recorded (180 minutes in total) and transcribed. The interviews were analysed qualitatively in several phases (Gioia et al., 2013; Miles & Huberman, 1994; Musteen et al., 2018). In the first phase, the members of the research team independently read the interviews and took notes on the theoretically pre-specified domains (Jack et al., 2008). The initial notes were discussed among the research team members. Subsequently, each researcher individually has coded the textual data and categorised specific quotes into 18 sub-constructs of PE (Table1) (Fereday & Muir-Cochrane, 2006) using RQDA software package widely used in qualitative research. These were then revisited and discussed by the team. Only quotes credited to participating in the computer-based simulation were kept. In the last stage the research reviewed the coding to get to a consensus on the aspects of students' psychological empowerment directly related to participation in the computer-based simulation. Therefore, the coded results were interpreted in an iterative manner until sufficiently refined (Huberman & Miles, 2002).

Analysis of the results

Survey data

The survey collected 52 responses from the BMT301 cohort (response rate = 48%) and 41 responses from BMT405 (response rate = 54%), totalling 93 (Table 2). No missing or incomplete data was present. The reliability of the scale was analysed using Cronbach's Alpha coefficient resulting in a score of 0.899, which is above the threshold of acceptable reliability (>0.7) (Nunnaly & Bernstein, 1994; Croasmun & Ostrom, 2011; Basto & Pereira, 2012).

Table 2 – Gender distribution of the study respondents (n=93)

	Frequency (Percentage)
Male	32 (34.41%)
Female	61 (65.59%)
Total	93 (100.00%)

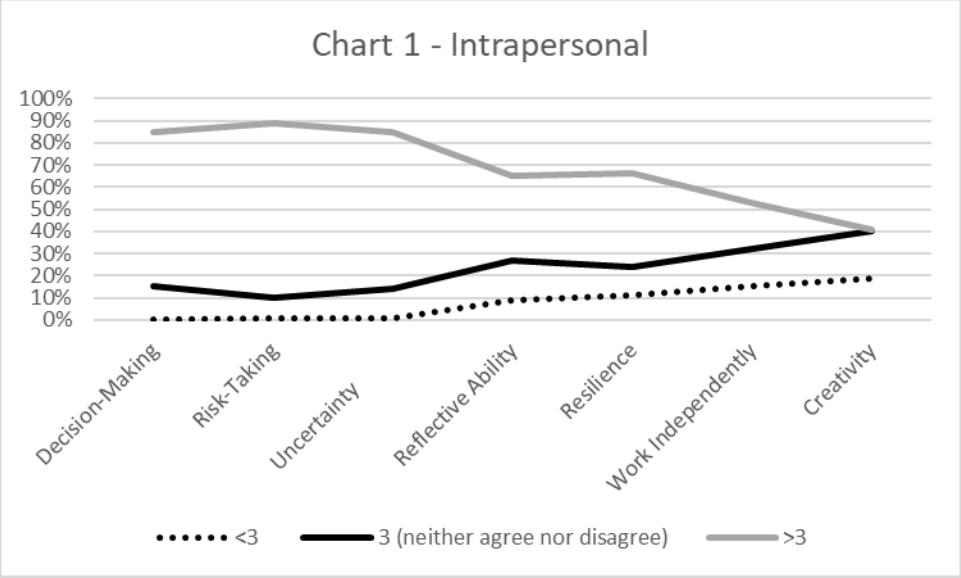
Looking at the responses to the survey, out of a possible score of 5 the mean score for all the questions is 3.868 and the standard deviation (SD) is between 0.642 and 0.962. These results suggest that respondents scored above the middle range of the scale used (3 = neither agree nor disagree) (Table 3).

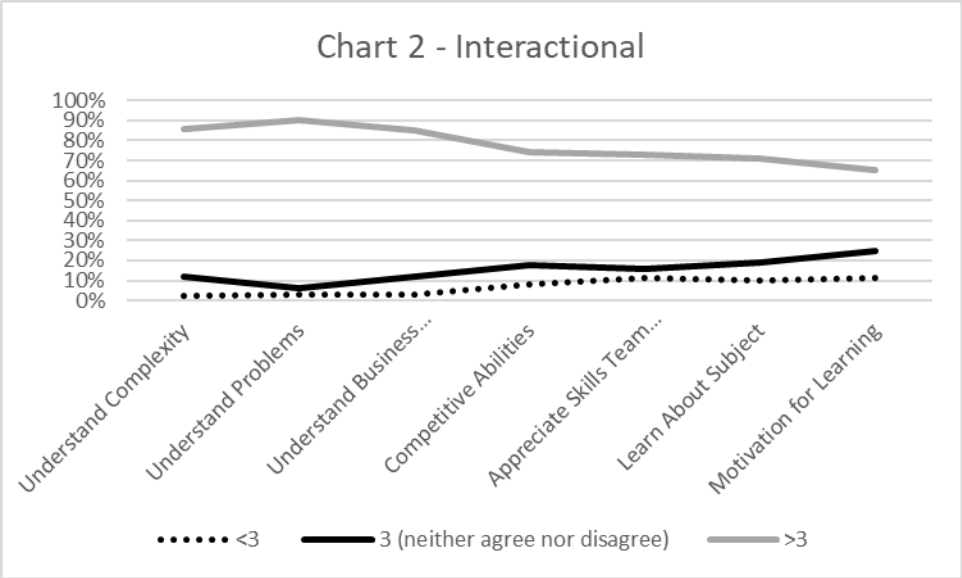
Table 3 – Mean and Standard Deviation for each variable (ranked from higher to lower)

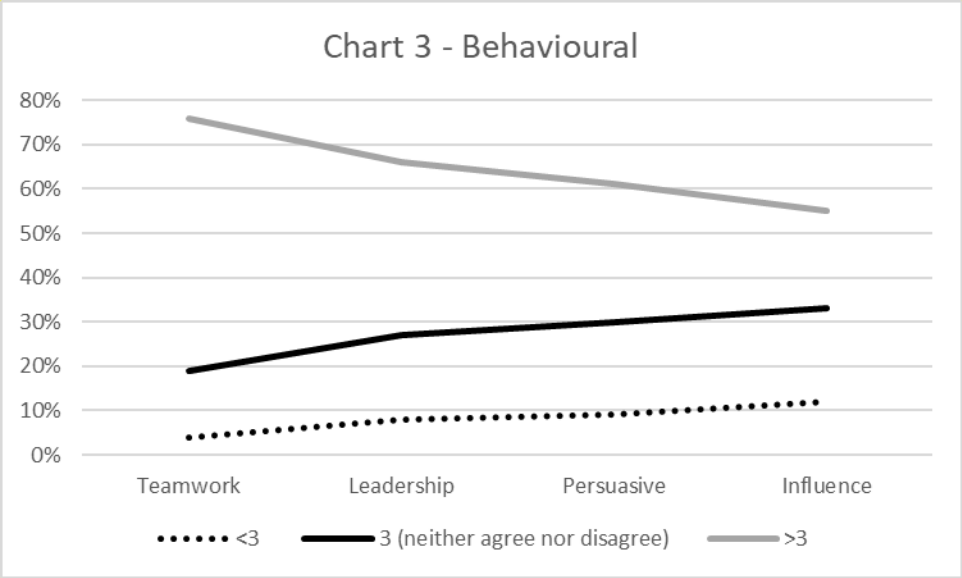
Sub-construct/Variable	Mean	SD
Intrapersonal		
Decision-Making	4.19	.680
Risk-Taking	4.18	.642

Uncertainty	4.10	.660
Reflective Ability	3.75	.868
Resilience	3.70	.894
Ability to work Independently	3.47	.939
Creativity	3.28	.925
Interactional		
Understand Complexity	4.27	.754
Understand Problems	4.24	.758
Understand Business Environment	4.16	.838
Competitive Abilities	3.88	.832
Appreciate Skills Team Members	3.84	.959
Learn About Subject	3.80	.962
Motivation for Learning	3.77	.934
Behavioural		
Teamwork	3.90	.738
Leadership	3.83	.928
Persuasive	3.69	.884
Influence	3.58	.889

Charts 1 to 3 show the cumulative frequency of distribution, splitting the responses into three categories.







The results demonstrate that students felt empowered across all dimensions of psychological empowerment, although a higher mean is noted on the intrapersonal (decision-making, risk-taking and dealing with uncertainty) and interactional (understand complexity, problems and the business environment) sub-constructs. This was also evidenced by student responses in the semi-structured interviews.

Semi-structured interviews

The results of the semi-structured interviews provide evidence of impact of business simulation on student decision-making abilities (intrapersonal sub-construct of PE) (mean=4.19):

> *The simulation allowed us to think about strategy and linking decisions to actions and consequences. We tried to find different strategies to test.*

The simulation allowed me to feel I was I was part of a real company making decisions with others which could affect the entire organisation.

The results also suggest that the students were better able to make decisions in circumstances of risk and uncertainty (Mean=4.18 and 4.10 respectively):

The simulation was a good trial and error experiencing and learning by doing that.

I can remember the mistake we make which is good because the next time I won't repeat the same mistake.

We were more prompt to take risks… it was not too scary…

There is no magic formula to make the things right.

Decision-making, risk and uncertainty had also the highest cumulative frequency of distribution (see Chart 1) compared to the other variables in the intrapersonal sub-construct of PE. However, we should bear in mind that students made decisions in a simulated environment, and were hence not exposed to the consequences of making mistakes in the real-world. Also, the module assessment disregards the performance of the business in the simulation, which may have encouraged students to take more risks. As noted:

The participation in the simulation has, on a whole, been a useful experience as it allowed the opportunity to make decisions regarding running an organisation without the risks associated with running an organisation in real life.

The students acquired a better understanding of various aspects of the external environmental which have been taken into consideration when managing a business entity, as well as a better understanding of the complexity associated with business decision-making (interactional sub-construct of PE) (Mean=4.16 and 4.27 respectively). Students commented:

The good thing with the simulation is that you need to understand your external environment what is going around you through the scenario given, which is exactly the same thing in a reality where you have to read the news…

We could get insight into how actually works in a real environment because just learning the theory is not enough…

When you study you mostly plug your head with theory because that is what you need when you need to use it doesn't really go together.

When you think about real-life businesses you… need to carefully consider what the other players in the real world are doing.

Before I would not really know much, you don't think about the processes that come into producing a finished product.

The students also highlighted that they appreciated the skills of their colleagues (mean=3.84) in helping them with collaborative decision-making:

The simulation helped to improve decision-making… work as a team, plug all the ideas and try to find a compromise.

… it helps in the future getting to know other people and you know they are good at certain aspects. You identify different skills.

I have personally learned a lot not only working and making decisions as a team but automatically got our own roles in the team.

I have learned that everyone has own opinion. I changed during the whole experience, we need to take into consideration all of the opinions.

Once we knew what we were doing in our groups, we enjoyed the simulation as it felt like our own and we were responsible for our own actions.

The simulation also motivated students to learn and engage more with the module and the topics covered (means-3.80 and 3.77 respectively):

The game simulation was a creative and exciting way to learn. Both lecturers deliver very good lectures and tutorials have been interesting learning how the game works.

The simulation game is a great way to keep students engaged.

The subject is interesting, and the business simulation has been quite fun.

These results also support the fact that student behavioural preferences shifted towards favouring working as part of a team (behavioural sub-construct of PE) (mean=3.9).

Student Academic Performance

To explore whether student psychological empowerment affects other outcomes such as academic performance, the grades of two consecutive years (before the use of simulation and the year when the simulation was adopted) were analysed. Beforehand, we introduce the grading system adopted by the Abertay University, according to which each piece of assessment is awarded a letter grade associated with a numerical value (Table 4).

Table 4 – Assessment scale of Abertay University

Literal grade	Grade point	Pass/Fail
A+	4.5	Pass
A	4	Pass
B+	3.5	Pass
B	3	Pass
C+	2.5	Pass
C	2	Pass

D+	1.5	Pass
D	1	Pass
MF	0.5	Marginal fail
F	0.0	Fail
NS	0.0	Non-submission/ Fail

To facilitate this analysis, student grades were grouped into six bands; grades A+ and A were counted as grade A, B+ and B as grade B, and so on (see Tables 5 and 6). The weighting of coursework and exam are specified in brackets.

Table 5 – Comparison of student grades before (2016/17) and after (2017/18) introduction of business simulation in the BMT301module

COURSEWORK BMT301 - 2017/18				COURSEWORK BMT301 - 2016/17				
Grade	Freq.	%	Cum.	Grade	Freq.	%	Cum.	Variation (*)
A	25	23%	23%	A	30	27%	27%	-4%
B	69	64%	87%	B	48	44%	71%	20%
C	14	13%	100%	C	20	18%	89%	-5%
D	0	0%	100%	D	12	11%	100%	-11%%
MF	0	0%	100%	MF	0	0%	100%	0%
F	0	0%	100%	F	0	0%	100%	0%
Total	108	100%		Total	110	100%		
EXAM BMT301 - 2017/18				COURSEWORK BMT301 - 2016/17				
Grade	Freq.	%	Cum.	Grade	Freq.	%	Cum.	Variation (*)
A	30	28%	28%	A	4	4%	4%	24%
B	39	36%	64%	B	23	22%	26%	10%
C	24	22%	87%	C	40	38%	64%	-16%
D	13	12%	99%	D	26	25%	89%	-13%
MF	1	1%	100%	MF	12	11%	100%	-10%
F	0	0%	100%	F	0	0%	100%	0%
Total	107	100%		Total	105	100%		

(*) indicates the difference of the frequency of distribution for each literal grade between two years (2017/18 minus the value in 2016/17).

In coursework for the BMT301 module, the percentage of A and C grades has decreased, while grade B has increased by 20%. For the BMT301 exam, the proportion of grades A and B has increased by 24% and 10% respectively, and all the grades below B have decreased

in numbers. It is particularly relevant that there is a noticeable reduction in the MF (10%) and D (13%) grades between the consecutive years analysed.

Table 6 – Comparison of student grades before (2016/17) and after (2017/18) introduction of business simulation in the BMT405module

COURSEWORK BMT405 - 2017/18				COURSEWORK BMT405 - 2016/17				
Grade	Freq.	%	Cum.	Grade	Freq.	%	Cum.	Variation (*)
A	5	7%	7%	A	9	10%	10%	-3%
B	35	47%	54%	B	32	37%	48%	-1%
C	26	35%	89%	C	35	41%	88%	-6%
D	8	11%	100%	D	8	9%	98%	2%
MF	0	0%	100%	MF	1	1%	99%	-1%
F	0	0%	100%	F	1	1%	100%	-1%
Total	74	100%		Total	86	100%		
EXAM BMT405 - 2017/18				EXAM BMT405 - 2016/17				
Grade	Freq.	%	Cum.	Grade	Freq.	%	Cum.	Variation (*)
A	1	1%	1%	A	1	1%	1%	0%
B	21	29%	30%	B	26	31%	33%	-2%
C	38	52%	82%	C	46	55%	88%	-3%
D	13	18%	100%	D	10	12%	100%	6%
MF	0	0%	100%	MF	0	0%	100%	0%
F	0	0%	100%	F	0	0%	100%	0%
Total	73	100%		Total	83	100%		

As for BMT405, the grades for the coursework did not improve much and there was an overall deterioration in the frequency of grades A and C, despite an absolute increase of the grades in the B band. Nonetheless, there was a decrease in both absolute and percentage of MF and F grades. For the BMT405 exam, the frequency and absolute values of grades B and C have decreased, and grade D has increased. No changes in terms of MF and F grades occurred.

Altogether, the results signify that the impact of a computer-based business simulation on the academic worth of coursework was quite positive as the mean of both modules is within the B band, while the exam results were affected by its practical emphasis, preventing the memory dump scenario often associated with discursive exams.

Discussion

The results highlight the parallels that can be drawn between the observations on student psychological empowerment and the impact of computer-based business simulation on student experience in the classroom. The business simulation technology allows for replication of real-life situations and incorporation of immediate decision making in the educational context. This functionality enables the simulation participants to take decisions and face the consequences as they would occur in a real-life industry environment (Anderson & Lawton, 2009; Doyle & Brown, 2000). Thus, the business simulation helps students to reflect, develop critical thinking and exercise self-control (Pittaway & Cope, 2007; Reynolds & Vince, 2004; Reese et al., 2015; Xu & Yang, 2010), associated with the intrapersonal sub-construct of PE. It promotes the application of skills within the decision-making process in circumstances of risk and uncertainty (Fripp, 1997; Gosen & Washbush, 2004). The results for the variable Decision-making, in the context of Risk and Uncertainty, have higher means and cumulative frequency of distribution (see Table 3 and Chart 1).

Experiencing the simulation also provided a good platform to better understanding of complexity and problems in a business environment (higher means for variables Understand Complexity, Understand Problems and Understand Business Environment in Table 3, and higher cumulative frequency of distribution in Chart 2). That, in turn, is an indicator that students are better prepared for making decisions in the contexts characterised by risk and uncertainty (as observed in the data and confirmed in the interviews). In addition, the use of business simulation technology facilitates social connectivity via team-based activities and learning (higher means for variable Teamwork in Table 1 and higher cumulative frequency of distribution in Chart 3) (Avramenko, 2012; Ceschi et al., 2013; McLoughlin & Lee, 2007; Reese et al., 2015).

The results suggest that the use of computer-based simulations had an impact on students' cognitive, behavioural and social frameworks (Buil et al., 2018; Buil et al., 2019; Vogel et al., 2006; Xu & Yang, 2010), as because of that impact students aremore empowered across all three dimensions analysed (intrapersonal, interactional and behavioural) (Zimmerman, 1995; Spreitzer, 1995). A novel aspect in our results is in the finding that these dimensions are intertwined and, therefore, the impact on one aspect of psychological empowerment will affect the others. Thus, students, while exhibiting an improved capacity for individual decision-making, would tend to excel as part of a team, bridging the intrapersonal and behavioural sub-constructs of psychological empowerment.

Furthermore, developing an advanced understanding of the complexity of and the principles underlining different aspects of external business environment supports student understanding of how the theory learned in the module relates to practice and enhances their ability to develop theory-led decisions while also encouraging them to learn more, or rather in-depth, about the subject. This indicates a strong link between the interactional and behavioural sub-constructs of psychological empowerment.

Finally, decision-making abilities, as well as the capacity for in-depth understanding of the issues pertinent to the external environment, are being augmented because of collaborative work. This can potentially benefit the formation of the skills and competences of other team members. These dynamics exemplify the interconnection be-

tween the intrapersonal, interactional and behavioural sub-constructs of psychological empowerment.

Therefore, the results positively answer to our initial question about the influence of computer-based simulations on students' psychological empowerment.

Concerning the second research question, even though the results suggest that students improved their academic performance after having experienced the computer-based simulation, the data available does not allow for confirming whether or not this effect might have been caused by a "cohort effect".

Implications and limitations of the study

The practical implications of this study are far-reaching. First, adopting the lens of psychological empowerment for assessing the impact of computer-based business simulations in classroom sheds new light on how technology affects students in the context of HE (Yassin & Hafeez, 2018) and particularly in teaching subjects related to business and enterprise. Moreover, this study has developed an instrument that can be further refined and adopted in subsequent studies exploring psychological empowerment and/or the use of technology in classroom. Additionally, this research indicates that psychological empowerment amplifies the impact of computer-based business simulation in leading to better engagement of students with the module being studied, including a consistently higher level of attendance in lectures and tutorial sessions across the semester.

Nonetheless, the study has several limitations. The first is that it does not support that empowered students attain higher grades across the board, which can be verified by further studies having a bigger sample as well as by adopting other statistical techniques in order to analyse the correlation between the scale and such dependent variable as student academic attainment. Therefore, we recommend that future studies adopt different approaches, such as experimental design, to enable evaluation of the link between psychological empowerment and academic attainment and/or employability similar to studies in the employability domain (Avramenko, 2012). The second limitation relates to the development of the scale instrument, which requires further testing with larger samples to confirm its reliability.

Conclusions

This paper has explored the impact of computer-based business simulations on student psychological empowerment in undergraduate business and management courses offered to students in a UK university. The study used a mixed method approach implementing a survey instrument and subsequently semi-structured interviews to support the theoretical model developed. Student academic performance in the participating modules was also analysed to ascertain the impact of empowerment beyond the students' individual perceptions. Our findings suggest that the intrapersonal, interactional and behavioural sub-constructs of psychological empowerment are interconnected, and that adopting the lens of PE framework provides a greater insight into the way and extent to which the use of computerised business simulation and potentially other technologies in the classroom can influence students

in a holistic way. Beyond the importance of student perceptions, the study suggests that the greater psychological empowerment was acting as a motivating factor for students by encouraging a stronger engagement with the module studied, improved attendance and improved overall satisfaction.

References

Anderson, P.H., & Lawton, L. (2009). Business simulations and cognitive learning: Developments, desires, and future directions. *Simulation & Gaming*, 40(2), 193-216.

Ashley, S., Schaap, H., & de Bruijn, E. (2016). Defining conceptual understanding for teaching in international business. *Journal of Teaching in International Business*, 27(2-3), 106-123.

Avramenko, A. (2012). Enhancing students' employability through business simulation. *Education + Training*, 54(5), 355-367.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, 84(2), 191-215.

Basto, M., & Pereira, J.M. (2012). An SPSS R-menu for ordinal factor analysis. *Journal of statistical software*, 46(4), 1-29.

Beetham, H., & Sharpe, R. (2013). *Rethinking pedagogy for a digital age: Designing for 21st century learning*. Routledge.

Bentler, P.M. (1990). Fit indexes, Lagrange multipliers, constraint changes and incomplete data in structural models. *Multivariate Behavioral Research*, 25(2), 163-172.

Blicker, L. (2005). Evaluating quality in the online classroom. In Encyclopedia of Distance Learning (pp. 882-890). IGI Global.

Bradbury-Jones, C., Sambrook, S., & Irvine, F. (2007). The meaning of empowerment for nursing students: a critical incident study. *Journal of Advanced Nursing*, 59(4), 342-351.

Brodie, P., & Irving, K. (2007). Assessment in work-based learning: investigating a pedagogical approach to enhance student learning. *Assessment & Evaluation in Higher Education*, 32(1), 11-19.

Brooks, C.F., & Young, S.L. (2011). Are Choice-Making Opportunities Needed in the Classroom? Using Self-Determination Theory to Consider Student Motivation and Learner Empowerment. *International Journal of Teaching and Learning in Higher Education*, 23(1), 48-59.

Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. Bollen & J. Long (Eds.), Testing Structural Equation Models (p. 136). SAGE.

Brunson, D.A., & Vogt, J.F. (1996). Empowering our students and ourselves: A liberal democratic approach to the communication classroom. *Communication Education*, 45(1), 73-83.

Buil, I., Catalán, S., & Martínez, E. (2018). Exploring students' flow experiences in business simulation games. *Journal of Computer Assisted Learning*, 34, 183-192.

Buil, I., Catalán, S., & Martínez, E. (2019). Engagement in business simulation games: A self-system model of motivational development. *British Journal of Educational Technology*, https://doi.org/10.1111/bjet.12762.

Ceschi, A., Dorofeeva, K., & Sartori, R. (2014). Studying teamwork and team climate by using a business simulation: how communication and innovation can improve group learning and decision-making performance. *European Journal of Training and Development*, 38(3), 211-230.

Cheng, M. (2016). *Student Empowerment and Transformative Quality. In Quality in Higher Education* (pp. 11-23). Sense Publishers.

Cleary, T.J., & Zimmerman, B.J. (2004). Self-regulation empowerment program: A school-based program to enhance self-regulated and self-motivated cycles of student learning. *Psychology in the Schools*, 41(5), 537-550.

Crant, J.M. (2000). Proactive behavior in organizations. *Journal of Management*, 26(3), 435–462.

Croasmun, J.T., & Ostrom, L. (2011). Using Likert-Type Scales in the Social Sciences. *Journal of Adult Education*, 40(1), 19-22.

Deci, E.L., & Ryan, R.M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of research in personality*, 19(2), 109-134.

Dimick, A.S. (2012). Student empowerment in an environmental science classroom: Toward a framework for social justice science education. *Science Education*, 96(6), 990-1012.

Doyle, D., & Brown, F.W. (2000). Using a business simulation to teach applied skills–the benefits and the challenges of using student teams from multiple countries. *Journal of European industrial training*, 24(6), 330-336.

Eisenhardt, K.M. (1989). Making fast strategic decisions in high-velocity environments. *Academy of Management journal*, 32(3), 543-576.

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International journal of qualitative methods*, 5(1), 80-92.

Field, A. (2013). *Discovering statistics using SPSS*. SAGE.

Finn, J.D., & Zimmer, K.S. (2012). Student engagement: What is it? Why does it matter?. In Christenson S., Reschly A., & Wylie C. (Eds.), *Handbook of research on student engagement* (pp. 97-131). Springer.

Fripp, J. (1997). "A future for business simulations?, *Journal of European Industrial Training*, 21(4), 138-142.

Frymier, A.B., Shulman, G., & Houser, M. (1996). The development of a learner empowerment measure. *Communication Education*, 45(3), 181–199.

Fugate, M., Kinicki, A.J., & Ashforth, B.E. (2004). Employability: A psycho-social construct, its dimensions, and applications. *Journal of Vocational Behavior*, 65(1), 14-38.

George, B. (2003). *Authentic leadership: Rediscovering the secrets to creating lasting value*. John Wiley & Sons.

Gerbing, D.W., & Anderson, J.C. (1992). Monte Carlo evaluations of goodness of fit indices for structural equation models, *Sociological Methods & Research*, 21(2), 132-160.

Gioia, D.A., Corley, K.G., & Hamilton, A.L. (2013). "Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, 16(1), 15-31.

Gosen, J., & Washbush, J. (2004). A review of scholarship on assessing experiential learning effectiveness. *Simulation & Gaming*, 35(2), 270-293.

Hair, J.F., Anderson, R.E., Tatham, R.L., & Black, W.C. (1995). *Multivariate data analyses with readings*. Englewood Cliffs.

Hart, J.W., Stasson, M.F., Mahoney, J.M., & Story, P. (2007). "The Big Five and Achievement Motivation: Exploring the Relationship Between Personality and a Two-Factor Model of Motivation. *Individual Differences Research*, 5(4), 267-274.

Harvey, L., & Green, D. (1993). Defining quality. *Assessment & evaluation in higher education*, 18(1), 9-34.

Hassi, M.L., & Laursen, S.L. (2015). Transformative learning: Personal empowerment in learning mathematics. *Journal of Transformative Education*, 13(4), 316-340.

Hayduk, L.A., & Glaser, D.N. (2000). Jiving the four-step, waltzing around factor analysis, and other serious fun. *Structural Equation Modeling*, 7(1), 1-35.

Houser, M.L., & Frymier, A.B. (2009). The role of student characteristics and teacher behaviors in students' learner empowerment. *Communication Education*, 58(1), 35-53.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), 1-55.

Huberman, M., & Miles, M.B. (2002). *The qualitative researcher's companion*. Sage.

Huff, M.T., & McNown Johnson, M. (1998). Empowering students in a graduate-level social work course. *Journal of Social Work Education*, 34(3), 375-385.

Jack, S., Dodd, S.D., & Anderson, A.R. (2008). Change and the development of entrepreneurial networks over time: A processual perspective. *Entrepreneurship and Regional Development*, 20, 125–59.

Johnson, J.P., Lenartowicz, T., & Apud, S. (2006). Cross-cultural competence in international business: Toward a definition and a model. *Journal of International Business Studies*, 37(4), 525-543.

Kaiser, H.F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.

Kennedy, S., Hardiker, N., & Staniland, K. (2015). Empowerment an essential ingredient in the clinical environment: A review of the literature. *Nurse education today*, 35(3), 487-492.

Kieffer, C.H. (1984). Citizen empowerment: A developmental perspective. *Prevention in human services*, 3(2-3), 9-36.

Kirk, C.M., Lewis, R.K., Brown, K., Karibo, B., Scott, A., & Park, E. (2017). The empowering schools project: Identifying the classroom and school characteristics that lead to student empowerment. *Youth & Society*, 49(6), 827-847.

Klein, E. J., & Riordan, M. (2011). Wearing the “student hat”: Experiential professional development in expeditionary learning schools. *Journal of Experiential Education*, 34(1), 35-54.

Kline, P. (2014). *An easy guide to factor analysis*. Routledge.

Koris, R., Örtenblad, A., & Ojala, T. (2017). From maintaining the status quo to promoting free thinking and inquiry: Business students’ perspective on the purpose of business school teaching. *Management Learning*, 48(2), 174-186.

Lord, J., & Hutchison, P. (2009). The process of empowerment: Implications for theory and practice. *Canadian Journal of Community Mental Health*, 12(1), 5-22.

Luthans, F., & Doh, J. P. (2012). *International management: Culture, strategy, and behavior*. McGraw-Hill.

Marsh, H. W., & Hocevar, D. (1985). Application of confirmatory factor analysis to the study of self-concept: First-and higher order factor models and their invariance across groups. *Psychological bulletin*, 97(3), 562-582.

Maton, K.I. (2008). Empowering community settings: Agents of individual development, community betterment, and positive social change. *American Journal of Community Psychology*, 41(1-2), 4-21.

Maton, K.I., & Rappaport, J. (1984). Empowerment in a religious setting: A multivariate investigation. *Prevention in Human Services*, 3(2-3), 37-72.

MacCallum, R.C., Browne, M.W., & Sugawara, H.M. (1996). Power analysis and determination of sample size for covariance structure modelling. *Psychological methods*, 1(2), 130-149.

Miles, M.B., & Huberman, A.M. (1994). *Qualitative Data Analysis*. Thousand Oaks: Sage Publications.

Milhauser, K.L., & Rahschulte, T. (2010). Meeting the needs of global companies through improved international business curriculum. Journal of Teaching in International Business, 21(2), 78-100.

McQuillan, P.J. (2005). Possibilities and pitfalls: A comparative analysis of student empowerment. *American Educational Research Journal*, 42(4), 639-670.

McLoughlin, C., & Lee, M.J. (2010). Personalised and self regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. *Australasian Journal of Educational Technology*, 26(1), 28-43.

McWhirter, E.H. (1998). An empowerment model of counsellor education. *Canadian Journal of Counselling*, 32(1), 12-26.

Musteen, M., Curran, R., Arroteia, N., Ripollés, M., & Blesa, A. (2018). A Community of Practice Approach to Teaching International Entrepreneurship. *Administrative Sciences*, *8*, 56.

Nelson, R. (2018). Failing with student success: the hidden role of bad luck and false empowerment. *Higher Education Research & Development*, 37(5), 1050-1061.

Nunnally, J.C., & Bernstein, I.H. (1994). *Psychometric Theory*. McGraw-Hill.

Paul, P., & Mukhopadhyay, K. (2005). Experiential learning in international business education. *Journal of Teaching in International Business*, 16(2), 7-25.

Peters, L.D., Pressey, A.D., Vanharanta, M., & Johnston, W.J. (2013). Constructivism and critical realism as alternative approaches to the study of business networks: Convergences and divergences in theory and in research practice. *Industrial Marketing Management*, 42(3), 336-346.

Pfeffer, J., & Fong, C.T. (2002). The end of business schools? Less success than meets the eye. *Academy of management learning & education*, 1(1), 78-95.

Phatak, A.V., Bhagat, R.S., & Kashlak, R.J. (2005). *International management: Managing in a diverse and dynamic global environment*. McGraw-Hill Irwin.

Pittaway, L., & Cope, J. (2007). Simulating entrepreneurial learning: Integrating experiential and collaborative approaches to learning. *Management learning*, 38(2), 211-233.

Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the horizon*, 9(5), 1-6.

Reese, D.D., Tabachnick, B.G., & Kosko, R.E. (2015). Video game learning dynamics: Actionable measures of multidimensional learning trajectories. *British Journal of Educational Technology*, 46(1), 98-122.

Reynolds, M., & Vince, R. (2004). Critical management education and action-based learning: Synergies and contradictions. *Academy of Management Learning & Education*, 3(4), 442-456.

Rogers, E.S., Chamberlin, J., Ellison, M.L., & Crean, T. (1997). A consumer-constructed scale to measure empowerment among users of mental health services. *Psychiatric services*, 48(8), 1042-1047.

Rossatto, C.A., & Dickerson, M.E.R.S.G. (2019). Reinventing Critical Digital Literacy to Empower Student-Teachers in Cross-Cultural, Web-Based Learning Environments. In *Handbook of Research on Cross-Cultural Online Learning in Higher Education* (pp. 138-158). IGI Global.

Sapnas, K.G., & Zeller, R.A. (2002). Minimizing sample size when using exploratory factor analysis for measurement. *Journal of nursing measurement*, 10(2), 135-154.

Schultz, S. & Shulman, G. (1993, April). *The development and assessment of the job empowerment instrument*. Joint Central States Communication Association and Southern States Communication Association annual convention, Lexington, KY, USA.

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of psychological research online*, 8(2), 23-74.

Shellman, A., & Ewert, A. (2010). A multi-method approach to understanding empowerment processes and outcomes of adventure education program experiences. *Journal of experiential education*, 32(3), 275-279.

Sheard, M., & Golby, J. (2006). Effect of a psychological skills training program on swimming performance and positive psychological development. *International journal of sport and exercise psychology*, 4(2), 149-169.

Sherer, M., Maddux, J.E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R.W. (1982). The self-efficacy scale: Construction and validation. *Psychological reports*, 51(2), 663-671.

Schwarzer, R., & Jerusalem, M. (1995). Optimistic self-beliefs as a resource factor in coping with stress. In Hobfoll S.E., & de Vries M.W. (Eds.), *Extreme Stress and Communities: Impact and Intervention* (pp. 159-177). Springer.

Sibthorp, J., & Arthur-Banning, S. (2004). Developing life effectiveness through adventure education: The roles of participant expectations, perceptions of empowerment, and learning relevance. *Journal of Experiential Education*, 27(1), 32-50.

Sibthorp, J., Paisley, K., & Gookin, J. (2007). Exploring participant development through adventure-based programming: A model from the National Outdoor Leadership School. *Leisure Sciences*, 29(1), 1-18.

Speer, P.W., & Hughey, J. (1995). Community organizing: An ecological route to empowerment and power. *American journal of community psychology*, 23(5), 729-748.

Spreitzer, G.M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal*, 38(5), 1442-1465.

Sternad, D. (2015). A challenge-feedback learning approach to teaching international business". *Journal of Teaching in International Business*, 26(4), 241-257.

Strauss, A., & Corbin, J.M. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Sage.

Treleaven, L., & Voola, R. (2008). Integrating the development of graduate attributes through constructive alignment. *Journal of marketing education*, 30(2), 160-173.

Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics*. Allyn & Bacon/Pearson Education.

Thomas, K., & Velthouse, B. (1990). Cognitive Elements of Empowerment: An "Interpretive" Model of Intrinsic Task Motivation. *Academy of Management Review*, 15(4), 666-681.

Vogel, J.J., Vogel, D.S., Cannon-Bowers, J., Bowers, C.A., Muse, K., & Wright, M. (2006). Computer gaming and interactive simulations for learning: A meta-analysis. *Journal of Educational Computing Research*, 34(3), 229-243.

Weber, K., Martin, M.M., & Cayanus, J.L. (2005). Student interest: A two-study re-examination of the concept. *Communication Quarterly*, 53(1), 71–86.

Wheaton, B., Muthen, B., Alwin D.F., & Summers, G. (1977). Assessing Reliability and Stability in Panel Models. *Sociological methodology*, 8, 84-136.

Xu, Y., & Yang, Y. (2010). Student learning in business simulation: An empirical investigation. *Journal of Education for Business*, 85(4), 223-228.

Yasin, N., & Hafeez, K. (2018). Enterprise Simulation Gaming: Effective Practices for Assessing Student Learning with SimVenture Classic and VentureBlocks. In Hyams-Ssekasi D., & Caldwell E. (Eds.), *Experiential Learning for Entrepreneurship* (pp. 51-69). Macmillan.

You, J.W. (2016). The relationship among college students' psychological capital, learning empowerment, and engagement. *Learning and Individual Differences*, 49, 17-24.

Yu, C.M.J., Guan, J.L., Yang, K.P., & Chiao, Y.C. (2005). Developing the Skills for International Business Management - the Implications of the Management Education Opportunity Grid. *Journal of Teaching in International Business*, 16(4), 5-26.

Zimmerman, M.A. (1995). Psychological empowerment: Issues and illustrations. *American journal of community psychology*, 23(5), 581-599.

Zimmerman, M.A. (2000). Empowerment theory. Psychological, organizational and community levels of analysis. In J. Rappaport, & E. Seidman (Eds.), *Handbook of Community Psychology* (pp. 43-64). Kluwer Academic.

Zimmerman, M.A., & Rappaport, J. (1988). Citizen participation, perceived control, and psychological empowerment. *American Journal of community psychology*, 16(5), 725-750.

Zimmerman, M.A., & Warschausky, S. (1998). Empowerment theory for rehabilitation research: Conceptual and methodological issues. *Rehabilitation psychology*, 43(1), 3-16.