

Personal values, social capital and higher education (HE) student career decidedness: A new ‘*protean*’ informed model

Abstract

This study investigates the role of personal values as motivational antecedents for understanding HE student career decidedness among university business school (UBS) students. We propose a new ‘*protean*’ informed HE student career decidedness model for theorizing how both personal values and social capital mediators (*student social capital; personal, social and enterprise skills; access to resources*) help in the student-centric and self-directed processes of career decision-making. A mixed methods study combines a (stage 1) survey of 308 UBS students from five (UK) university business schools, with results from (stage 2) four student focus groups, and (stage 3) two staff-student interactive seminars. From an employability perspective, arguably, the ultimate responsibility for becoming a ‘*protean graduate*’ rests with each UBS student, whilst the obligation of HE staff is to effectively facilitate and nurture all possible personal growth and skills development opportunities.

Keywords: career decidedness, personal values, social capital, enterprise skills, employability

INTRODUCTION

‘*Career decidedness*’, referring to an individual’s degree of confidence in following a specific career direction (Restubog, Florentino *and* Garcia 2010), is becoming an increasingly important employability issue for UK university business school (UBS) graduates. We define higher

education (HE) student career decidedness as the extent to which students are certain about intended career paths they would like to pursue and develop after leaving university (Gordon 1998; Restubog, Florentino and Garcia 2010). Research suggests that those who are more firmly career decided are more likely to secure longer term employment and meaningful career opportunities within their chosen vocational domain (Hirschi 2011; Restubog, Florentino and Garcia 2010). Career decidedness and vocational identity achievement research also suggests wider benefits in terms of better life satisfaction among those students who are career decided (Hirschi 2011; Lounsbury et al. 1999).

Gordon's (1998) literature review famously identified several multi-dimensional subtypes of student career decidedness ranging from: '*very decided*'; '*somewhat decided*'; '*unstable decided*'; '*tentatively decided*'; '*developmentally undecided*'; '*seriously undecided*'; '*chronically undecided*'. The most common theoretical frameworks involving these sub-types have been personality led, e.g. trait based anxiety, self-esteem, locus of control, emotional stability, neuroticism (see Gordon 1998; Hirschi 2011; Lounsbury, Hutchens and Loveland 2005). For example, Lounsbury et al. (1999; Lounsbury, Hutchens and Loveland 2005) studied the personality antecedents of career decidedness in relation to college students, finding positive correlations with traits such as student conscientiousness and agreeableness, but negative relationships with neuroticism (Lounsbury et al. 1999). Shafer (2000) also found a positive correlation between career decidedness and conscientiousness. However, Saki and Gati (2007) suggested students with emotional difficulties may find it difficult to make definite career decisions. Personality led investigations tend to suggest similar findings, namely, positive traits are related to stronger career decidedness, and those individuals with negative affect, or emotionally unstable characteristics are often less career decided (Gordon 1998; Hirschi 2011).

Interestingly, none of the above research streams have investigated HE student career decidedness from a UBS (student oriented) perspective. In addition, much of the available career decidedness research relies heavily on relationships with distal personality constructs, rather than *'personal values'* as motivational antecedents. Arguably, personal values are also a useful lens for examining higher education (HE) graduate career expectations (Gibbs and Griffin 2013). A personal value is defined as an enduring perspective, or belief in an end goal state, that affects a sense of purpose in one's life (Rokeach 1973). A personal value system "*is an enduring organization of beliefs concerning preferable modes of conduct, or end states of existence along a continuum of relative importance*" (Rokeach 1973, p.5). An investigation of student personal values (as motivational antecedents) is proposed to better understand how UBS students come to decide upon future career plans. By investigating both personal values and career decidedness together within a combined social capital framework, we can draw effectively upon recent student-centric *'protean'* ideas (Hall 2002; 2004).

According to protean theory, 21st century graduating UBS students should to a large extent, be both *'personal values driven'* and *'self-directed'* (Briscoe and Hall, 2006). A truly protean orientation, "*represents a self-directed perspective in looking at one's career that provides a guide to action*" (Briscoe and Hall 2006, p.6). In this sense, protean mindedness involves: (a) a cognitive component (set of beliefs about one's career); (b) an evaluative aspect (about what constitutes a *'good'*, or *'bad'* career choice), and; (c) an integral behavioural component (an action tendency that aligns core personal values with adaptive, self-directed career management).

Protean self-directed UBS students should thus, be self-aware, responsible for, and freely able to shape their own career decision-making (Briscoe and Hall 2006; Hall 2004). In this

respect, we argue there is a growing interest in the self-directed and enabling impacts of social capital, and social resource based mediators (Seibert, Kraimer and Liden 2001; Zhang et al. 2010) in student careers and employability research. Recent examples in a HE context include: (a) how undergraduate students are motivated to use their social capital and networks for career development and future employability (van Vuuren et al. 2014); (b) how HE students access careers resources as part of their available social networks; (c) the personal, social and enterprise (PSE) skills attained whilst at university (CABS 2015; Draycott, Rae and Vause 2011; Jones and Iredale 2010). Nevertheless, to date, there is no specific quantitative, or mixed methods research (that we are aware of) which brings these various strands together as part of a combined protean informed HE student personal values and social capital research framework.

With the above arguments in mind, relationships involving both personal values and HE student career decidedness are developed within a new mediated model/framework (see Figure 1). As a guiding research question, we ask;

(RQ) what are the key (protean) social capital enabled mediators of personal values and HE student career decidedness for UK university business school students?

To investigate our research question, the article is organized as follows. Firstly, a background to personal values and HE student career decidedness is established. Informed by relevant literature, student social capital, access to social network/ careers resources, and PSE skills are theorized to understand possible pathways to career decidedness. Secondly, as some subscales are new or freshly adapted within a HE setting, an exploratory factor analysis is included to contextualize data and inform hypotheses development. Results from confirmatory factor analysis (i.e. measurement modeling) are also examined, to test for goodness-of-fit and

model plausibility. Thirdly, correlations, multiple regressions and path (structural) modeling of results pertaining to hypotheses (H1-H6) are presented. Thematic qualitative data from focus groups are also analyzed and cross-compared with survey results where appropriate. Fourthly, all results are discussed, in conjunction with implications for theory and practice, as well as limitations of the study, and suggestions for further research.

THEORETICAL DEVELOPMENT

Personal values and HE career student decidedness

It is widely recognized that personal values have the power to influence attitudinal based cognitions, which in turn, have effects on individual career decision-making and behavior (Feather 1995). Personal values are thus a useful starting point for investigating the self-regulatory cognitive mechanisms through which HE student career decision-making commitments are made and intended personal goals realized (Bilsky and Schwartz 1994; Watchravesringkan et al. 2013). Self-actualization personal values (e.g. sense of accomplishment, self-respect, being well respected), along with social affiliation values (e.g. warm relationship with others) have already been associated with graduate career decision-making and long term careers choices (Watchravesringkan et al. 2013). Añaña and Nique (2010) found mixed evidence relating to student personal values and graduate career choices, such as: nursing students being influenced by a combination of values that represent stability, self-transcendence and virtuosity dimensions; whilst students from other subjects, such as accountancy, having negative relationships with self-transcendence values, but positive relationships with stability and conformity. However, personal values are distinct from personality traits (Lounsbury, Hutchens and Loveland. 2005; Rokeach 1973), in that they better

reflect intentional personal goals and commitments, readily captured through self-report survey analysis (Watchravesringkan et al. 2013). In this sense, hypothesizing subtypes of personal values in relation to HE student career decidedness is a useful first step within our study (Gibbs and Griffin 2013).

In terms of theory development, three core '*personal value facets*' or subtypes were measured (based on Elizur and Sagie 1999; Sagie and Elizur 1996), namely: (a) '*cognitive*' information processing and reason based values (e.g. sense of achievement, accomplishment, meaningful life); (b) '*affective*' values which deal with emotions and feelings (e.g. feelings of love, enjoyment from life, happiness, relationships with others); (c) '*material*' classification involving practical life and contextual considerations (e.g. job security, pay and conditions, health etc.). A '*cognitive*', '*material*' and '*affective*' analysis at item level is important, because we posit that a mainly cognitive and material mix of personal values is most effective in predicting HE student career decidedness. These represent the more '*driven*' value facets behind protean career decision-making that one would reasonably expect from career focused UBS students (Briscoe and Hall 2006). With the above arguments in mind, hypothesis 1 is developed as follows:

H1 Personal values (mainly cognitive and material) are positively related to HE student career decidedness.

Personal values and peer-to-peer student social capital

From a theoretical perspective, social capital often implies exploiting the '*value*' of social structures, or network relationships that facilitate instrumental actions, thus enabling opportunity benefits for an individual, or a collective of participants (Coleman 1990; Seibert, Kraimer and

Liden 2001). Social capital can comprise actual and potential resources embedded within social network(s), or from individuals within, and across networks (Nahapiet and Ghoshal 1998). Cognitive personal values in particular interact with the self-directed goals of maximizing the social capital value of participation in social networks to avail of new career opportunities (Briscoe and Hall 2006).

Social capital theory suggests that individuals will cooperate on a relational exchange basis (when possible) for the common shared good, as well as develop a sense of shared personal and organizational values (Macneil 2000; Putnam 2000). Recent cooperative social capital research suggests this can be achieved by: (a) creating effective social norms; (b) improving trust; (c) greater information sharing; (d) working together as colleagues; (e) developing expectations of relationship reciprocity; (f) closer inter-personal relationships to accumulate further social capital (Bridge 2013; Nahapiet and Ghoshal 1998; Zhang et al. 2010).

We know that students receive top-down physical, emotional and social support from staff in most HE institutions and careers services. However, we don't know the extent to which cooperative student social capital is developed, or manifest through for example, peer-to-peer network relationships with other class mates/colleagues. Nor, do we know if this form of shared social capital directly influences HE student career decidedness. Finally, it would also be useful to know if UBS student personal values and shared student social capital both affect career decidedness, with student social capital as an intervening/ mediating variable.

To investigate further, we develop hypothesis 2 (a,b) as follows:

H2a. (Peer-to-peer) student social capital positively relates to HE student career decidedness.

H2b. The extent of student social capital mediates an indirect relationship between personal values and HE student career decidedness.

Access to careers and social network resources (mobilizing social capital)

Access to social network resources and information are important for individual empowerment and careers success (Spreitzer 1996; Seibert, Kraimer and Liden 2001). Spreitzer (1996) developed two measures, namely access to information, and access to resources. However, access to information and network resources are linked in terms of cognitive personal values, social capital and social resource theory (Lin 1982; 1999; Seibert, Kraimer and Liden 2001). Social resource theory suggests that self-directed individuals can gain advantages in terms of instrumental actions (e.g. finding a job), through accessing available social capital, social networks and ties for salient resources including information advantages about organizational and careers opportunities (Lin 1999; Zhang et al. 2010). Access to resources can also improve career success by increasing self-efficacy, personal competences and perceptions of career control, as well as productivity and organizational performance (Seibert, Kraimer and Liden 2001). Seibert, Kraimer and Liden (2001) found for example, that access to both information and resources (as well as career sponsorship) were full mediators between social capital and careers success.

Sparrowe et al. (2001) suggest that it is not just task information that is important, rather the advice networks available as social capital resources which inform individuals about how to mobilize and achieve personal success, as well as increase performance. Access to social capital networks in conjunction with the timely availability of high quality information is important for

helping individuals understand new opportunities, and thereby make informed career decisions (Seibert, Kraimer and Liden 2001; Spreitzer 1996).

Most (UK) HE institutions invest heavily in their promoting their careers services and on-line social networks as a form of available social capital, to inform students about relevant employability and careers information. However, we have scant empirical (quantitative) evidence about how HE students mobilize, or perceive access to careers resources, or how access to such resources might affect career decidedness. It would also be useful to know if personal values here too play an important role in predicting access to resources, and ultimately HE student career decidedness.

Based upon the above arguments, hypothesis 3 (a,b) is developed as follows:

H3a. Access to careers resources positively relates to HE student career decidedness.

H3b. Access to careers resources mediates an indirect relationship between personal values and career decidedness.

Personal, social and enterprise (PSE) student skills (enabling social capital)

Understanding the self-directed learning journey is important for personal, social and enterprise (PSE) skills development (CABS 2015; van Vuuren et al. 2014). For UBS students, there is often an application of business ideas as part of PSE skills development in areas such as, “*decision-making, problem-solving, networking, identifying opportunities and personal effectiveness*” (DfBIS 2013, p.15). PSE skills have been receiving increased scholarly and policy attention from the UK government, as they represent a vital link between HE education, business and the future of the economy (CABS 2015; DfBIS 2013; Draycott, Rae and Vause 2011; Jones and Iredale

2010). Learning individual and team oriented PSE skills, plus how to avail of social capital resources and networks can help HE students succeed in the graduate workplace, as well as in life, and in wider society (Jones and Iredale 2010). Developing active, student-centric engagement as part of the social and learning processes of HE skills and career development should also help in realizing desired employment goals (CABS 2015; Holmes 2013).

In this sense, strong PSE skills development can be viewed as a vital social capital enabler for the success of graduating UBS (and HE) students (Bridge 2013). PSE skills are often developed within a HE setting, or as part of extra-curricular behavioral learning activities and experiences (Draycott, Rae and Vause 2011). For example, some social networking and enterprise skills are embedded into UBS courses, or acquired during extra-curricular ‘*action oriented*’ entrepreneurial learning events, such as university business challenge competitions (Draycott, Rae and Vause 2011; van Vuuren *et al.* 2014). Many UK universities now offer work related learning, or employability modules, along with supervised work placements to embed and develop relevant PSE skills.

Whilst much of the recent UBS personal, social and enterprise skills/ education debate has rightly focused on potential links with increased productivity, new venture creation and entrepreneurial learning (DfBIS 2013; Draycott, Rae and Vause 2011), we suggest that further PSE skills research in conjunction with student personal values, social capital and HE student careers development is required. With this in mind, hypothesis 4 (a,b) is developed as follows:

H4a. Personal, social and enterprise (PSE) skills positively relate to HE student career decidedness.

H4b. Personal, social and enterprise (PSE) skills mediates an indirect relationship between personal values and career decidedness.

Integrating personal values and social capital paths (key sequences in the model)

In addition to the above parallel pathway mediation investigations between personal values, social capital mediators and HE student career decidedness (i.e. H2-H4), additional hypotheses are developed (H5-H6) to analyze contingent and integrative path model sequences. It would be beneficial to know the most effective pathways, or mediated routes in the newly proposed framework/model (see Figure 2). This can help conceptualize: (a) how various social capital enablers interrelate with each other, and of course; (b) the most significant pathways for UBS students on their self-directed (protean) journey towards career decidedness (see Figure's 1 & 2).

Findings from H5(a,b) and H6(a,b) (see below) are presented later in conjunction with results from H2-H4, to help contextualize overall discussion and identify priority areas for future HE student personal values and social capital research. For example, both social capital and social resources theory (Lin 1999; Seibert, Kraimer and Liden 2001; Sparrowe et al. 2001; Zhang et al. 2010) allude to possible paths/ routes between: (1) personal values → student social capital → access to careers resources → HE student career decidedness, as well as; (2) personal values → PSE skills → access to careers resources → HE student career decidedness (see Figure 2). These combined path sequences are broken down into two mediation hypotheses, namely H5(ab) and H6(ab), which are investigated later (see Table 6):

H5a. Social capital mediates the relationship between personal values and access to careers resources within the overall model.

H5b. PSE skills mediate the relationship between personal values and access to careers resources within the overall model.

H6a. Access to careers resources mediates the relationship between social capital and HE student career decidedness.

H6b. Access to careers resources mediates the relationship between PSE skills and HE student career decidedness.

The above H1-H4 and H5-H6 relationships are conceptualized in Figure 1 below.

[INSERT FIGURE 1 HERE...]

METHOD AND PROCEDURES

Stage 1 - an on-line survey was administered to 2nd, 3rd and 4th year registered undergraduate (UG) student respondents in 5 UK university business schools (UBS) between end of September 2014 and mid-February 2015. From a combined total of 2200 students, there were 346 replies, an overall response rate of 15.7%. 308 responses (89%) were considered eligible for further analysis in this study. 38 responses (11%) were discounted, as they did not legitimately fall within the above UG subcategories (e.g. 1st year UG, or postgraduate student responses). The 5 UBS were chosen based on a maximum variation sampling technique, reflecting the various mix of teaching and research oriented universities commonly found in the UK. One university was a Russell Group UBS, representing a research leading institution, two UBS were members of the UK Alliance Group, representing mid-tier UK universities, and the remaining two were classified as ‘new university’ business schools with a primary focus on teaching, as opposed to research.

Details of the questionnaire and on-line survey procedure, as well as aims and objectives of the research were reviewed by respective ethics committees at each participating university. Relevant instructions were provided to all UG respondents about how to complete the on-line survey. Students were advised to respond to the survey individually and in their own time, if possible (i.e. outside of class-time). They were also advised that completing the survey instrument did not contribute to the '*awarding of marks*' for any summative assessment activity associated with their degree programme(s). Student respondents participated on an entirely voluntary basis. An option was made available to consult a member of the co-author team about how to complete the survey (if such a need arose). Reminders were posted through on-line virtual learning environments (e.g. Blackboard), and mention was made of the survey during relevant UG classes to boost response rates in November 2014, and again in January 2015. See descriptive results for further information about the wider profile of survey respondents.

Stage 2 - involved 4 student focus groups after the on-line survey period had closed. These were set-up at 2 universities with students from a similar range of degree programmes, e.g. management and related, marketing, human resources (HR), accounting and finance (from March to May 2015) to discuss key relationships in the proposed research model (see Figure 1). Student focus groups (between 12-15 student members in each group) lasted between 1 to 1.5 hours. Several (standardized) semi-structured focus group questions were developed to: (a) help compare results against the survey data, and; (b) uncover new and emerging themes across the 4 focus groups (see Wolff, Knodel and Sittitrai 1993; Yin 2002). Students who completed the

survey were not invited to participate again during stage 2 focus groups. (i.e. avoiding cross-contamination of triangulated data).¹

The definition of HE student career decidedness (Gordon 1998; Restubog, Florentino and Garcia 2010) used in the introduction to this article was employed as a basis for focus group discussions. Sample questions for focus group discussion included: (a) how decided are you about a definite career path after leaving university?; (b) what is your chosen/ intended career path?; (c) what are (please describe) your short and longer term intentions after leaving university? (*prompts... eg travel, work abroad, short term jobbing, plan for career straightaway*); (d) do your inner personal values, and/ or, family and socio-cultural background have any influence on your perception of an 'ideal' career?; (e) how important are your university classmates (as colleagues and friends) for helping you make career decisions?; (f) how important are university staff (including career services) for making key careers decisions?; (g) who have you talked with recently about career decision-making? (*prompts... eg family, friends, uni staff, careers service, employers*).

Stage 3 – open ended, interactive research seminars were held at 2 further universities for generating discussion and feedback from a mixture of university staff, interested students, and those involved in promoting HE student employability and careers (between November and December 2015). The universities chosen for seminars were known to the co-author team. There were approximately 20 participants in each seminar. These sessions were necessary to probe and explore the validity of survey and focus group results. The interactive dialogue helped us

¹ See Wolff, Knodel and Sittitai (1993) for guidance on developing complementary survey and focus group research.

consider various policy and practice implications from the current research, as well as discuss ideas for future work.

Measures

HE student career decidedness as a dependent variable construct (DV) was adapted from Lounsbury, Hutchens and Loveland (2005). Respondents were asked on a five point Likert scale about the extent to which they agreed/ disagreed with five statements. Sample items include, “I am having a difficult time choosing among different careers (reverse coded)” and “I have made a definite decision about a career for myself” (*Cronbach's $\alpha = 0.83$*)

Personal values are measured using Kahle (1983) and Kahle, Beatty and Homer's (1986) shortened list of values (LoV), similar to (Watchravesringkan et al., 2013). We assigned a core modality facet for each individual personal value item, namely: ‘*affective*’; ‘*cognitive*’; or ‘*material*’, based on the classifications and criteria used by Elizur and Sagie (1999) and Sagie and Elizur (1996). This internal designation is useful for researchers evaluating factor structure at item level, as it helps examine which individual personal values remain (or drop-out) after exploratory factor analysis. HE students were asked to study Kahle's (1983) nine LoV's carefully, i.e.: (1) sense of belonging (affective); (2) excitement (affective); (3) warm relationship with others (affective); (4) self-fulfillment (cognitive); (5) being well respected (cognitive); (6) fun and enjoyment of life (affective); (7) security (material); (8) self-respect (cognitive); (9) a sense of accomplishment (cognitive). Respondents were asked to rate each

value item against how important it is in their daily life, *where 1 = very unimportant to 9 = very important. (Cronbach's $\alpha = 0.88$)*²

Access to (careers) resources was adapted from Spreitzer (1996) for a HE university setting. Respondents were asked on a five point Likert scale about the extent to which they disagreed/agreed with the following statements: (1) I can obtain the necessary resources to gather new ideas about careers information and opportunities; (2) where I need additional resources about careers information and opportunities, I can usually get them; (3) I have access to the resources I need to find out about careers information and opportunities. *(Cronbach's $\alpha = 0.83$)*

Student social capital was captured based on an adapted measure from Zhang et al. (2010). On a five point Likert scale, respondents were asked about the extent to which they disagreed/agreed with various items. A sample item included: "my University classmates (i.e. lecture, tutorial or seminar colleagues) and I trust each other". *(Cronbach's $\alpha = 0.75$)*

Personal, social and enterprise (PSE) student skills were measured based on an instrument taken from Omerzel and Antončič (2008). Respondents were asked on a scale from 1 = *very low* to 5 = *very high*, to indicate the extent to which they have developed eight PSE skills. Sample items included: leadership and management skills; communication skills; ability to lead and convince others. *(Cronbach's $\alpha = 0.75$)*

Exploratory factor analysis (EFA)

As some of the sub-scale items proposed were new, or first time adaptations of recent constructs, including: affective, cognitive and material personal values; student social capital; and PSE

² Sub-scales were developed after exploratory factor analysis (EFA) and tested as part of confirmatory factor analysis (CFA). See EFA/ CFA section for final scales used and accompanying composite reliability scores.

skills, it was deemed prudent to conduct an exploratory factor analysis (EFA) (Ruscio and Roche 2012). In the absence of previous empirical studies, or appropriate sub-scale validation, an EFA allows researchers to examine the underlying factor structure and communality of items before finalizing hypotheses and proceeding to CFA and structural analysis (Anderson and Gerbing 1998). Therefore, an unconstrained principal axis factoring technique was applied, with promax rotation to allow for some inter-correlation of items in the subsequent EFA model. As a consequence, three affective value items were removed from '*personal values*' due to unsatisfactory cross-loadings (i.e. personal values 3, 1 and 2, with Cronbach's α for remaining items = 0.85). As a further consequence, we amended our theory view of personal values and adapted hypotheses, as it became clear we were dealing with mainly cognitive/material personal values³. In addition, three further items with weak item loadings (<0.4) were removed from '*personal, social and enterprise (PSE) skills*'.

The final EFA converged on 6 rotations and the 5 new latent factors accounted for 51% of total explained variance. The KMO result (0.833) was acceptable. All remaining Cronbach's alphas (α) were above 0.7, indicating construct reliability. A Harman's fixed single factor (principal component) test was applied on survey items, resulting in 22% of total variance explained. This is well under the 50% threshold for common method variance, suggesting common method bias was not an issue. Independent focus group data were used as part of modeling analysis, to inform findings and triangulate with survey data results.

³ The breakdown/mix of cognitive, affective and material personal values from EFA results is elaborated upon more fully during the discussion.

Confirmatory factor analysis (CFA)

Following Anderson and Gerbing's (1988) general advice, a maximum likelihood analysis was also developed (after EFA) to test alternative CFA hypothesized models against the observed data, establish goodness-of-fit (GoF), and assess convergent and discriminant validity. After analysis of the standardized residual covariance matrix in AMOS, two further items were removed from '*PSE skills*', and three items from '*student social capital*' because of convergent validity concerns. A final 3 item '*PSE skills*' sub-scale remained, emphasizing personal and social skills such as: leadership and management skills; communication skills, and; ability to lead and convince others, with a composite reliability (CR) score = 0.751. A 3 item '*student social capital*' sub-scale was also left, with items pertaining to: degree of classmate/colleague trust; classmate/colleague willingness to help in difficult situations, and; willingness to cooperate with other classmate/ colleagues at university (CR score =0.752).

The 5 latent factor CFA model was considered best fit (compared with competing models, see Table 1): $\chi^2 = 301$, $p < .001$; CMIN/DF = 1.886; RMSEA = 0.054; SRMR = .0492; GFI = 0.909; AGFI = 0.880; CFI = 0.938; TLI = 0.926. Three alternative latent factor models have also been tested/ compared (see Table 1): (a) a four factor model (with student social capital on access to resources); (b) a three factor model (with personal values and PSE as one factor); (c) a one factor model with all items on HE career decidedness.

[INSERT TABLE 1 HERE...]

Construct reliability results were deemed satisfactory (for the 5 factor model), as both Cronbach's alpha scores for derived sub-scales, as well as factor composite reliability (CR)

scores were greater than 0.7 (see Table 2 for CR scores, i.e. >0.75). Table 2⁴ demonstrates the 5 latent factor model against Fornell and Larcker's (1981) minimum criteria for convergent validity, with all AVE's >0.5. Maximum shared variance (MSV) is also greater than average shared variance (ASV), demonstrating satisfactory discriminant validity.

[INSERT TABLE 2 HERE...]

Based upon the above results and theoretical assumptions, the 5 latent factor CFA measurement model was considered to have the most acceptable, or best fit, and thus plausible for further structural analysis.

RESULTS

In the following sections, we address hypotheses (H1-H6) through a combination of descriptive results, Pearson's correlations, multiple hierarchical regression testing and path (mediation) analysis from the survey data. Selected qualitative focus group findings are also presented and discussed.

Descriptive statistics

All UBS students surveyed were full-time undergraduate (Year's 2, 3 and 4), and registered UK higher education (HE) business school students. 57% of respondents were female, 43% male⁵. In terms of a respondent age profile: 63% of students were between 20-21 years of age; 26.3% were between 22-23 years; 6.5% were older than 23 years, and; 4.2% were younger than 20 years.

⁴ Table 2 generator courtesy of Dr James Gaskin, http://statwiki.kolobkreations.com/wiki/Main_Page

⁵ One UBS preferred not to have a 'gender' question in a survey to their students. Therefore, their gender data are only available for 223 students. Gender (on this basis) was excluded from the AMOS modeling, because of missing values. Otherwise, it would have been included as an additional control variable.

67.5% of students were in year 3 (final year - no placement), 16.9% were year in 2, and 15.6% in year 4 (final year - with placement). In terms of degree course profiles, or programme classifications: 43% of respondents self-reported as general business and management and related courses; 23% accounting and finance; 12% marketing; 5% finance; 6% tourism and hospitality; 3% human resource management; 8% business degree with other subject.

Correlations and regressions

Table 3 highlights various statistically significant ($p < 0.05$, $p < 0.01$ and $p < 0.001$) bivariate correlations among modeled variables. The control variables '*age*' and '*year at university*' are correlated ($r = 0.250$, $p < 0.01$), which is to be expected. Year at university and perceptions of PSE skills are also correlated ($r = 0.148$, $p < 0.01$). In addition, all 5 latent factors statistically correlate with each other at ($p < 0.01$) significance levels.

[INSERT TABLE 3 HERE...]

Table 4 presents hierarchical multiple regression (HMR) modeling results based on a maximum likelihood factor model with career decidedness as the dependent variable (DV). Table 4 is useful, because it helps investigate direct relationships (H1, H2a, H3a, H4a) in the proposed model (Figure 1). A HMR (see Table 4) also demonstrates the predictive incremental validity of introducing social capital mediator variables (Model 4, $\Delta R^2 = 0.136^{***}$) over personal values (Model 3, $\Delta R^2 = 0.041^{***}$), after controlling for age and year at university (Models 1 and 2). In Model 4, personal values dropped out of significance ($\beta = 0.051$, $p > 0.05$, n.s.) when mediator variables were introduced (simultaneously). After HMR analysis of standard residuals, predicted values and normal probability plots suggested no violations of

regression assumptions. Variance inflation factors (VIF's) were all below 1.3, indicating no problems with multicollinearity.

[INSERT TABLE 4 HERE...]

Table 5 establishes a case for mediation by firstly showing results from the traditional Baron and Kenny (1986) causal steps approach (see MacKinnon, Fairchild and Fritz 2007). The extent of mediation is commonly characterized as '*full*' or '*partial*', i.e. referring to the explained predictive effect of the independent variable (IV) on the dependent (DV) through the mediating variable (MV). For full mediation to occur, the c' path must drop out of significance. For partial mediation, the c' path effect will remain statistically significant. Secondly, we apply a bootstrapping re-sampling approach (see also MacKinnon, Fairchild and Fritz 2007), which helps quantify the indirect (Boot) effect (with p value) through the mediator on the ' $a \rightarrow ab$ ' paths. The benefit of this type of dual analysis (i.e. applying both causal steps and bootstrapping) increases the robustness of mediation results for discussion purposes. Additional normal theory mediation tests were not deemed necessary.

In terms of overall approach to path investigations, we first consider results in Table 5 (H2b, H3b, H4b), i.e. where each of the MV's are partialled out and the constituent indirect effects evaluated. As H2b, H3b, H4b are parallel MV path investigations, we can also comment on the extent of mediation for each of the proposed MV latent factors in the discussion section. Secondly, we analyze proposed MV path sequences (i.e. H5ab, H6ab) to determine the most powerful mediation and regression paths in the overall model (see results in Table 6 and Figure 2).

[INSERT TABLE 5 HERE...]

Hypothesis 1 results from Table 4 (HMR model 3) demonstrate support for H1 with ($F = 4.503$, $p < 0.01$), ($\Delta R^2 = 0.041$, $p < 0.001$) and a significant '*personal values*' beta value ($\beta = 0.204$, $p < 0.001$), thus indicating that personal values \rightarrow career decidedness. H1 is therefore supported.

Hypothesis 2 (a,b) results from Table 4 (combined HMR model 4) show support for H2a with ($F = 10.891$, $p < 0.001$), ($\Delta R^2 = 0.136$, $p < 0.001$) and a significant '*(student) social capital*' beta value ($\beta = 0.126$, $p < 0.05$). Results from Table 5 (path model 1) suggest the relationship between personal values and career decidedness is partially mediated by PSE skills, thus H2b is supported. To summarize, H2 (a,b) are both supported.

Hypothesis 3 (a,b) are based on interpreting results from both Table's 4 and Table 5. Results from Table 4 (i.e. combined HMR model 4 statistics as above) show support for H3a with a significant '*access to careers resources*' beta value ($\beta = 0.250$, $p < 0.001$). Results from Table 5 (path model 2) suggest the relationship between personal values and career decidedness is partially mediated by access to careers resources, thus H3b is supported. Summarizing, H3 (a,b) are both supported.

Hypothesis 4 (a,b) results from Table 4 (i.e. combined HMR model 4) demonstrate support for H4a with a significant '*personal, social and enterprise (PSE) skills*' beta value ($\beta = 0.133$, $p < 0.05$). Results from Table 5 (path model 3) suggest the relationship between personal values and career decidedness is fully mediated by PSE skills, thus H4b is supported. Therefore, both H4 (a,b) are supported.

An integrated personal values and social capital path analysis

Hypothesis 5 (a,b) proposes some interesting path relationships (see Table 6, path model's 4 & 5) in the new combined/ integrated theoretical model. Figure 2 and Table 6 highlight the statistically significant indirect effects of (a path 4) personal values \rightarrow social capital ($\beta = 0.28$, $p < 0.001$), and (b path 4) social capital \rightarrow access to careers resources ($\beta = 0.18$, $p < 0.05$). Figure 2 also depicts (a path 5) personal values \rightarrow PSE skills ($\beta = 0.37$, $p < 0.001$), and (b path 5) personal values \rightarrow access to careers resources ($\beta = 0.32$, $p < 0.001$). The (combined) standardized regression effect of the common (c' paths 4 & 5) personal values \rightarrow access to careers resources is not statistically significant i.e. Figure 2, $\beta = .05$ (n.s.). If we break this mediation analysis down to each constituent pathway, results from Table 6 show that there is a partial mediation effect on c' path 4, thus H5a is supported. However, Table 6 also shows that personal values \rightarrow access to careers resources (c' path 5) drops out of statistical significance ($p = 0.176$) when mediated through PSE skills, thereby demonstrating a full mediation effect on path 5. Therefore, H5b is also supported, but with a stronger indirect effect via ab path 5, compared with ab path 4 on access to careers resources.

Hypothesis 6 (a,b) suggests that access to careers resources plays a key central mediating role in the model. Figure 2 and Table 6 (path model 6) both demonstrate that access to careers resources fully mediates the relationship between social capital and career decidedness (path 6a, $\beta = 0.18$, $p < 0.05$) and (path 6b, $\beta = 0.25$, $p < 0.001$). Therefore, H6a is supported. Figure 2 and Table 6 (path model 7) also show that access to careers resources fully mediates the relationship between PSE skills and career decidedness (path 7a, $\beta = 0.32$, $p < 0.001$) and (common paths 6b/7b, $\beta = 0.25$, $p < 0.001$). Therefore, H6b is also supported.

[INSERT FIGURE 2 HERE...]

[INSERT TABLE 6 HERE...]

Qualitative focus group findings

Focus groups (stage 2) and interactive sessions with staff and students (stage 3, discussed later in implications for practitioners) helped contextualize survey results by allowing us to reflect, and explore the efficacy of modeled/ hypothesized relationships (see Figure 1). We highlight thematic qualitative data in the results section below, as well as a triangulated comparative analysis against stage 1 survey data (where appropriate).

Firstly, most business and management students (i.e. 21 across 4 focus groups) expressed the most difficulty in articulating a definite career plan. Accounting and finance students (i.e. 15), appeared more affirmative/ positive about their reflections on decision-making, long term goals and commitment to a directed career plan. Common career decided narratives (after graduation) include, ‘*move from home*’, and work in London (South East UK), or various destinations internationally e.g. New York, Paris and Dubai. For students who were developmentally undecided (Gordon 1998), ‘*career visualization*’ was a barrier theme that emerged,

“It’s hard when you are in that position, when you are soon to graduate, and you haven’t really had a look at jobs per se, we know the type of jobs we can get, it is just hard to visualize where you want to be” “ (marketing student – focus group 3)

Straddling all 4 focus group discussions, students were quick to characterize the UK graduate job market-place as ‘*very competitive*’. Maintaining a sense of self-efficacy and inner belief in the face of perceived obstacles was a real personal challenge for some. As two students noted,

“You need to have at least a year’s experience within a HR office. It’s hard, I’ve got the degree, but not the experience... it’s so difficult”. (HR student – focus group 4)

“...it’s exciting, but scary at the same time. I know I have the [digital marketing] skills, but there are so many people, all competing for the same jobs, difficult!... but I am looking forward to the challenge, I can’t wait to graduate (marketing student – focus group 2)

Social capital (based on trusted co-student, staff and parental relationships) in conjunction with access to social networks for opportunity awareness and decision-making was important across all 4 focus groups. Access to careers services were important for providing job/career opportunity awareness, enabling student reflection and tactical CV building, as one management student noted (focus group 3),

“they [careers service] are really helpful, but I haven’t talked to them about what I planned to do. It’s complicated... It is mainly friends and family, and teachers that I have spoken too”.

The ‘*going back and forth*’ process of mulling over, and (re)considering career choices was also a common theme, which is intrinsically reflexive, personal and developmental (Gordon 1998). Final year was viewed as a particularly vulnerable and stressful time for participating HE students, in terms of both dealing with assessments and considering possible career(s) futures. When asked who they turned to most for careers advice and counsel, family was important for confidence building and offering reassurance. As one business and management student noted (focus group 1);

“it is mainly my family, my brother who’s just got a job on a graduate scheme, so I ask him for advice. My mum is a teacher, so they both help... and of course, I would like them to be proud of me”.

This analysis was also borne out by social capital statistics in the main survey. When students were asked who they consult most about career decision-making, results clearly indicated that parents were the most widely used social network resource, i.e. 89%, followed by personal friends 71%, then student colleagues/ classmates (51%), departmental lecturers/tutors (49%), and careers advisors (37%).

Cognitive and material facet values were highlighted, and often associated with acquiring ‘*money and status*’. Some students acclaimed these as part of a necessary mindset for achieving career success (mainly marketing and accounting/finance students), drawing upon role model examples, such as candidates from the BBC’s ‘*Apprentice*’ programme. Some perceived a trade-off with more affective values, i.e. being close to home, friends and family, and suggested metaphorically, they wouldn’t ‘*sacrifice everything*’ for a personal career and wealth attainment. Others suggested being able to travel for job opportunities temporarily (in the short term) as worthwhile, but envisaged returning home in the long term, as a matter of course. Accounting and finance students appeared to be more aware of a ‘*cognitive tradeoff*’, discerning that opportunity seeking was a necessary part of developing aspiration and personal ambition values. These ideas are similar to the protean arguments offered by Briscoe and Hall (2006), who suggest that being prepared to traverse unfamiliar work boundaries (involving geographical travel) is required for successful self-directed career development. Otherwise, the authors argue (*ibid*), individuals can become ‘*fortressed*’, or locked-in by self-limiting personal values, with a corresponding lack of willingness to experiment, and exploit potential new career opportunities.

DISCUSSION

The remainder of the article discusses the above results in light of our research question (RQ) and considers implications for theory, policy and practice. This is followed by a short statement of limitations and concluding remarks. Given word limit constraints, specific contributions and ideas for future research are highlighted where relevant.

Theoretical Implications

Results from the survey, and indeed throughout the study (e.g. H1, H2b, H3b, H4b), suggest that mainly cognitive/material personal values have an important role in either directly, or indirectly helping to explain HE student career decidedness. Cognitive values (e.g. *'self-fulfillment'*, *'being well-respected'*, *'self-respect'*, *'sense of achievement'*) are thus directly relevant for aspiring UBS graduates. Interestingly, *'fun and enjoyment of life'* (affective) was also found to be part of the UBS student personal values mix, along with *'security'* as a material value (based on survey results). This aligns with personal values theory being at the heart of self-direction from a protean career perspective (Briscoe, Hall and DeMuth 2006). An implication is that attuning HE students to their underlying personal values mix (cognitive, affective, material) whilst at university, might help them avoid becoming potentially *"trapped/ lost"* in directionless career voids, or *"fortressed/ constrained"* in the first available graduate job that comes along (Briscoe and Hall 2006, p11-14).

H2 (a,b) were supported from the survey results and highlight the importance of peer-to-peer student social capital (i.e. fellow students as classmates/ or colleagues) for predicting career decidedness. In a follow up path analysis, (H5a) results suggested that student social capital mediated the relationship between personal values and access to careers resources, which is an

important finding, and corroborates the literature link between student oriented social capital and social resources theory (see Lin 1999; Seibert, Kraimer and Liden 2001). Results from student focus groups support this view, with family and friends also being considered important for career decision-making.

H3 (a,b) were also supported, and suggest that access to careers resources from the a social capital perspective is important (along with a mainly cognitive/material personal value mix) for helping to explain career decidedness. However, it is only when combined with additional path analysis H6 (a,b), we realize just how fundamental access to careers resources really is (as a mediator) in explaining HE student career decidedness. Access to careers resources fully mediated the relationship between student social capital and career decidedness, as well as PSE skills and career decidedness. Future moderated-mediation investigations could investigate levels of '*university staff support*', as well as, '*the role of parental support*' as social capital moderators in the new model. Support from parents and family were important in the current study, thus meriting further dedicated empirical investigation.

H4 (a,b) were supported and highlight the importance of PSE skills in helping to explain career decidedness. '*Personal leadership*', '*communication*', and '*ability to lead and convince others*' were significant in the model. A full mediation result for (H4b) demonstrates just how critical it is for students to develop these core personal and social skills as part of their university experience (see van Vuuren et al. 2014 for similar). In addition, the (H5b) full mediation result indicates that a student's personal values in the presence of these skills can help explain access to careers resources, which in turn (H6b), helps predict HE student career decidedness.

Considering all (direct and indirect) effects together, the combined path model analyses from the survey data (see Figure 2) suggests that UBS students with mainly cognitive/material personal values have better developed personal and social skills, and higher degrees of peer-to-peer student social capital, which in turn both predict better access to careers resources (as a proximal mediator), which ultimately predicts student HE career decidedness. In terms of robustness analysis, there was acceptable fit in the final integrated path model (see Figure 2): $\chi^2 = 357$, $p < 0.001$; CMIN/DF = 1.799; RMSEA = 0.051. GFI = 0.902; AGFI = 0.876; CFI = 0.931; TLI = 0.920 (see Table 1 for measurement model GoF statistics).

Implications for policy and practice

The first implication is that HE careers advisors and educators should be aware of how UBS students organize and characterize their personal values mixes/sets in relation to graduate career decision-making. This was also noted/highlighted during interactive seminar sessions (stage 3) involving both staff and students. Similarly, it is important for HE careers services to recognize the social power of students working with, and influencing each other for career decision making (from stage 1 survey and stage 2 focus groups, and reiterated during stage 3 seminar feedback). From a policy perspective, empirical results help justify existing scholarly research and public funding investments in promoting HE enterprise skills (e.g. DfBIS 2013). Future enterprise education initiatives might also consider the HE student learning journey alongside the '*growth and nurturing*' aspects of graduate identity (Hinchliffe and Jolly 2011), i.e. combining personal values with personal and social skills development to improve graduate self-efficacy, and meta-competencies (see Hall 2004), such as behavioral adaptability and self-awareness.

Limitations and concluding remarks

In terms of limitations, we stress that both the cross-sectional survey design (stage 1) and focus group investigations (stage 2) were based on UBS students within a relatively small number of institutions. Whilst every effort was made to be selective about the universities sampled, we are careful not to infer generalizability based on the current work. So, even though preliminary results were reported as “*exciting and useful*” by staff and students alike (stage 3), a further extension of this research is required to fully understand what constitutes a HE protean graduate identity, not just for UBS students, but for other faculty students as well. We also note the competitiveness of the job market itself as a major issue, and any future research study should be cognisant of this issue along with the potential implications for students.

With hindsight, we could have included socio-cultural values in the main survey design, e.g. family background and diversity values/influences (which emerged from student focus group analysis). Another research question could have also focused on the full extent and consequences of HE student ‘*career decidedness versus indecision*’ within (UK) UBS. We hope to address some of these issues as part of future work.

Finally, the ideas, relationships and findings discussed therein are important as we get to know the personal values and motivations of 21st century HE students and graduates. We hope researchers and practitioners from other faculties/ HE domains can effectively draw upon this empirical study, thereby adding to a growing body of identity research, in conjunction with employability and skills development (similar to Hinchliffe and Jolly 2011; Holmes 2013).

REFERENCES

- Añaña, E. D-S., and W.M. Nique. 2010. "Personal Values In Relation to Graduate Career Choices." *International Journal of Public Sector Management* 23 (2):158 – 168.
- Anderson, J. C., and D.W. Gerbing. 1988. "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach." *Psychological Bulletin* 103 (3): 411-423.
- Baron, K. A., and D.A. Kenny. 1986. "The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations." *Journal of Personality and Social Psychology* 51 (6): 1173–1182.
- Bilsky, W., and S. Schwartz. 1994. "Values and Personality". *European Journal of Personality* 8, 163–181.
- Bridge, S. 2013. "Reflections on The Omission of Social Capital from Enterprise Education and Business Start Training." *Education and Training* 55 (8/9): 899 – 910.
- Briscoe, J.P., and D.T. Hall. 2006. "The Interplay Of Boundaryless and Protean Careers: Combinations and Implications." *Journal of Vocational Behavior* 69 (1): 4-18.
- Briscoe, J.P., D.T. Hall, and R.L.F. DeMuth. 2006. "Protean and Boundaryless Careers: An Empirical Exploration." *Journal of Vocational Behavior* 69 (1): 30-47.
- Byrne, B. M. 1994. *Structural Equation Modeling with EQS and EQS/Windows*. Thousand Oaks, CA: Sage Publications.
- CABS, 2015. Chartered Association of Business Schools (UK). *Perspectives on: Employability Is it time to move the employability debate on?*, 1-9. Available at: <http://charteredabs.org/wp-content/uploads/2015/06/Employability-Debate1.pdf> (accessed 28/12/15).
- Coleman J.S. 1990. *Foundations of social theory*. Cambridge, MA: Harvard University Press.
- DfBIS, 2013. Dept. for Business and Innovation Skills Enterprise Education. *Impact in Higher Education and Further Education*, 1-107. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/208715/bis-13-904-enterprise-education-impact-in-higher-education-and-further-education.pdf (accessed 27/12/15).
- Draycott, M., D. Rae, and K. Vause. 2011. "The Assessment of Enterprise Education in The Secondary Education Sector." *Education and Training* 53 (8/9): 673-691.
- Elizur, D., and A. Sagie, 1999. "Facets of Personal Values: A Structural Analysis of Life and Work Values." *Applied Psychology: An International Review* 48 (1): 73-87.
- Feather, N.T. 1995. "Values, Valences, and Choices: The Influence of Values on the Perceived Attractiveness And Choices Of Alternatives." *Journal of Personality and Social Psychology* 68 (6): 1135-1151.

- Fornell, C., and D.F. Larcker. 1981. "Evaluating Structural Equation Models With Unobservable Variables And Measurement Error." *Journal of Marketing Research* 18 (1): 39–50.
- Gibbs K.D., and K.A. Griffin 2013. "What Do I Want To Be With My PhD? The Roles of Personal Values and Structural Dynamics in Shaping The Career Interests of Recent Biomedical Science PhD Graduates." *CBE—Life Sciences Education* 12 (4): 711–723.
- Gordon, V. N. 1998. "Career Decidedness Types: A Literature Review." *The Career Development Quarterly* 46: 386–403.
- Hall, D.T. 2002. *Protean Careers In and Out of Organizations*. Thousand Oaks, CA: Sage.
- Hall, D.T. 2004. "The Protean Career: A Quarter-century Journey". *Journal of Vocational Behavior* 65 (1): 1-13.
- Hinchliffe, G.W., and A. Jolly 2011. "Graduate Identity and Employability." *British Educational Research Journal* 37: 563-584.
- Hirschi, A. 2011. "Vocational Identity As a Mediator of The Relationship Between Core Self-Evaluations." *Applied Psychology: An International Review* 60(4): 622–644.
- Holmes L. (2013). "Competing Perspectives On Graduate Identity: Possession, Position or Process?." *Studies in Higher Education* 38 (4): 538 – 554.
- Hu, L.T., and P.M. Bentler. 1999. "Cutoff Criteria For Fit Indexes in Covariance Structure Analysis: Conventional Criteria Vs New Alternatives." *Structural Equation Modeling* 6: 1-55.
- Jones, B., and N. Iredale. 2010. "Enterprise Education as Pedagogy." *Education and Training* 52 (1): 7-19.
- Kahle, L. R. 1983. *Social Values and Social change: Adaptation to life in America*. NY: Praeger.
- Kahle, L.R. S.E. Beatty, and P. Homer 1986. "Alternative Measurement Approaches to Consumer Values: The List of Values (LOV) and Life Style (VALS)." *Journal of Consumer Research* 13 (3): 405–9.
- Lin, N. 1982. *Social Resources and Instrumental Action*. In *Social Structure and Network Analysis*, ed. PV Marsden, N Lin, pp. 131– 45: Beverly Hills, CA, Sage.
- Lin, N. 1999. "Social Networks and Status Attainment." *Annual Review of Sociology* 25: 467–87.
- Lounsbury, J. W., H.E. Tatum, W. Chambers, K. Owens, and L.W. Gibson. 1999. "An Investigation of Career Decidedness in Relation To "Big Five" Personality Constructs and Life Satisfaction." *College Student Journal* 33 (4): 646-652.
- Lounsbury, J.W., T. Hutchens, and J.M. Loveland 2005. "An Investigation of Big Five Personality Traits and Career Decidedness Among Early and Middle Adolescents." *Journal of Career Assessment* 13 (1): 25-39.

- MacKinnon, D.P., A.J. Fairchild, and M.S. Fritz. 2007. "Mediation Analysis." *Annual Review of Psychology* 58: 593–614.
- Macneil, I. R. 2000. "Relational Contract Theory: Challenges and Queries." *Northwestern University Law Review* 94: 877-907.
- Nahapiet, J., and S. Ghoshal. 1998. "Social Capital, Intellectual Capital and The Organizational Advantage." *Academy of Management Review* 23: 242–266.
- Omerzel, D.G., and B. Antončič. 2008. "Critical Entrepreneur Knowledge Dimensions For SME Performance." *Industrial Management and Data Systems* 108 (9): 1182 – 1199.
- Putnam, R.D. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster.
- Restubog, S.L.D., Florentino, A.R., and P.R.J.M. Garcia. 2010. "The Mediating Roles of Career Self-Efficacy and Career Decidedness in The Relationship Between Contextual Support and Persistence." *Journal of Vocational Behavior* 77 (2): 186-195.
- Rokeach, M J. 1973. *The Nature of Human Values*. New York: Free Press.
- Ruscio, J., and B. Roche. 2012. "Determining The Number of Factors To Retain in Exploratory Factor Analysis Using Comparison Data of Known Factorial Structure." *Psychological Assessment*, 24 (2): 282-292.
- Sagie A., and D. Elizur. 1996. "The Structure of Personal Values: A Conical Representation of Multiple Life Areas." *Journal of Organizational Behavior*, 17 (1): 573-586.
- Saki, N., and I. Gati. 2007. "Emotional and Personality-Related Aspects of Persistent Career Decision-Making Difficulties." *Journal of Vocational Behavior* 71 (3): 340–358.
- Seibert, S.E., M.L. Kraimer, and R.C. Liden. 2001. "A Social Capital Theory of Career Success." *Academy of Management Journal* 44 (2): 219-237.
- Shafer, A. B. 2000. "Mediation of The Big Five's Effect On Career Decision Making By Life Task Dimensions and On Money Attitudes By Materialism." *Personality and Individual Differences* 28 (1): 93-109.
- Sparrowe, R.T., R.C. Liden, S.J. Wayne, and M.L. Kraimer. 2001. "Social Networks and The Performance of Individuals and Groups." *Academy of Management Journal* 44 (2): 316-325.
- Spreitzer, G. M. 1996. "Social Structural Characteristics of Psychological Empowerment." *Academy of Management Journal* 39 (2): 483-504.
- van Vuuren, W., C. Fearon, G. Van Vuuren-Cassar, and J. Crayford. 2014. Entrepreneurial learning and the IBM Universities Business Challenge: an experiential learning perspective. In A. Fayolle, and D. Redford (Ed). *Handbook on the Entrepreneurial University* (pp. 392-413). Cheltenham: Edward Elgar.

Watchravesringkan, K. T., N.N. Hodges, J. Yurchisin, J. Hegland, E. Karpova, S. Marcketti, and R. Yan. 2013. "Modeling Entrepreneurial Career Intentions Among Undergraduates: An Examination of The Moderating Role of Entrepreneurial Knowledge and Skills." *Family and Consumer Sciences Research Journal* 41 (3): 325–342.

Wolff, B., J Knodel, and W. Sittitrai 1993. *Focus Groups and Surveys as Complementary Research Methods*. In D.L. Morgan (Ed). *Successful Focus Groups: Advancing State of the Art*. (pp. 119-136). Newbury Park, London/ New Delhi: Sage Publications.

Yin, R. 2002. *Case Study Research, Design and Methods*. (3rd ed.) Newbury Park, California: Sage Publications.

Zhang, K., J. Liu, R. Loi, V.P. Lau, and H-Y. Ngo. 2010. Social Capital and Career Outcomes: A Study of Chinese Employees. *International Journal of Human Resource Management*, 21(8): 1323–1336.

Figure 1. HE student career decidedness model (*protean informed*)

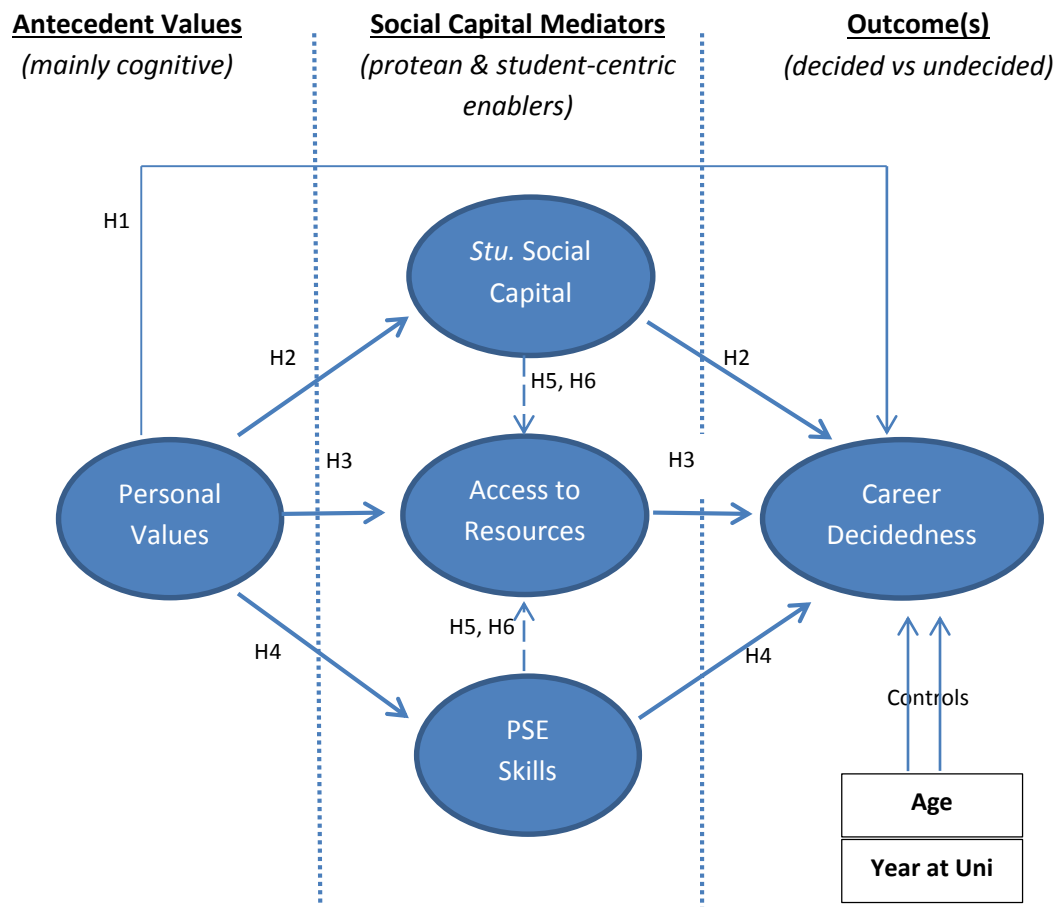


Figure 2. Combined/ integrated path model

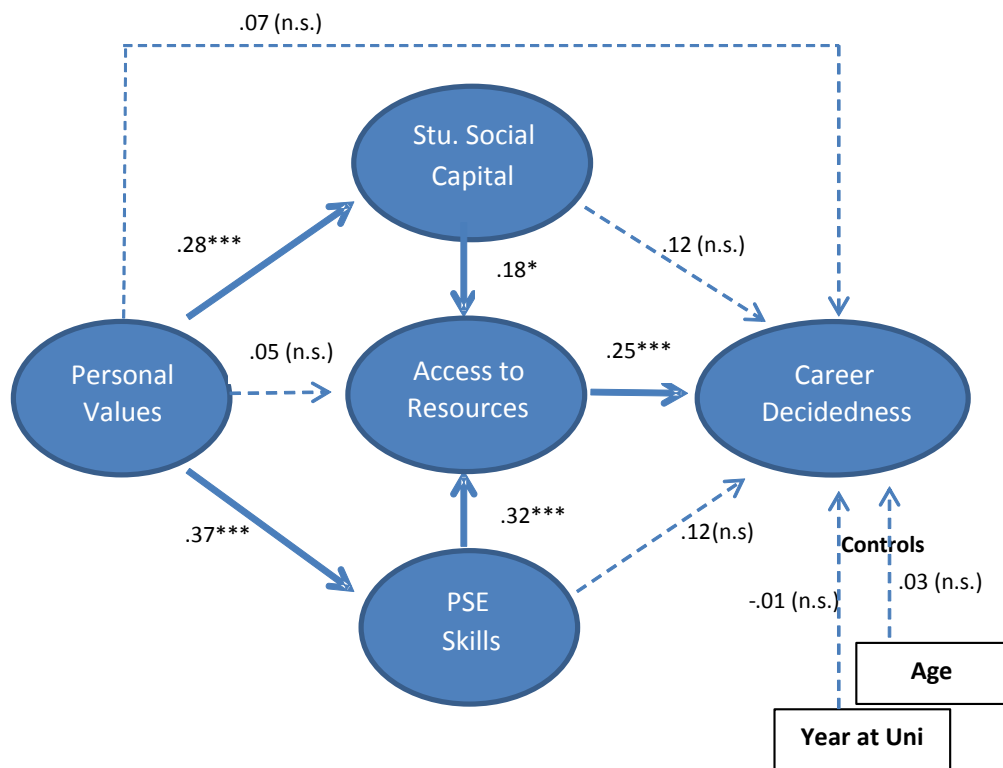


Table 1. Alternative CFA factor models (GoF)

	χ^2 ($p < .001$)	CMIN/DF	RMSEA	SRMR	GFI	AGFI	CFI	TLI
1 factor	2190	7.907	0.150	0.1546	0.551	0.473	0.334	0.278
3 factor	1193	4.387	0.105	0.1168	0.711	0.655	0.679	0.646
4 factor	860	3.199	0.085	0.0948	0.796	0.753	0.794	0.770
5 factor	301	1.886	0.054	0.0492	0.909	0.880	0.938	0.926

* Suggested cut-off's for acceptable model fit: **(a) absolute fit indices**, RMSEA < or close to 0.06 (Hu & Bentler, 1999); SRMR < 0.08 (Hu & Bentler, 1999); GFI > 0.90 (Byrne, 1994); AGFI > 0.90; **(b) relative fit indices**, CFI > 0.93 (Byrne, 1994); TLI > 0.95.

Table 2. Analysis of variance for convergent and discriminant validity

	CR	AVE	MSV	ASV	PSE_ SKILLS	PERSON_ VALS	STU_ SOCIAL CAPITAL	CAREER_ DEC	ACCESS_ RES
PSE_SKILLS	0.751	0.503	0.147	0.114	0.709				
PERSON_VALS	0.857	0.503	0.130	0.072	0.361	0.709			
STUDENT SOCIAL CAPITAL	0.752	0.504	0.102	0.077	0.320	0.267	0.710		
CAREER_DEC	0.834	0.506	0.118	0.073	0.273	0.200	0.243	0.711	
ACCESS_RES	0.833	0.626	0.147	0.097	0.384	0.211	0.277	0.343	0.791

Table 3. Bivariate correlation analysis

	AGE	YEAR_ AT_UNI	PSE_ SKILLS	PERSON_ VALS	S.SOCIAL_ CAPITAL	CAREER_ DEC	ACCESS_ RES
AGE	1	.250**	.082	.081	.011	.034	-.007
YEAR_ AT_UNI	.250**	1	.148**	-.016	.005	.007	-.027
PSE_ SKILLS	.082	.148**	1	.408**	.380**	.315**	.451**
PERSON_ VALS	.081	-.016	.408**	1	.293**	.205**	.245**
S.SOCIAL_ CAPITAL	.011	.005	.380**	.293**	1	.272**	.322**
CAREER_ DEC	.034	.007	.315**	.205**	.272**	1	.363**
ACCESS_ RES	-.007	-.027	.451**	.245**	.322**	.363**	1

Statistical significance: * p<.05; ** p<.01; *** p<.001

Table 4. Hierarchical multiple regression (HMR) modelling

Variables	Model 1	Model 2	Model 3	Model 4
<u>Control Variables</u>				
Age	.034	.034	.016	.022
Year at University	.	-.001	.006	-.011
<u>Antecedent(s)</u>				
Personal Values				
			.204***	.051
<u>Social Capital Mediators</u>				
Student Social Capital				.126*
Access to Careers Resources				.250***
Personal, Social & Enterprise (PSE) Skills				.133*
df	1	2	3	6
F stats	.347	.173	4.503**	10.891***
R square	.001	.001	.043	.178
Adjusted R square	-.002	-.005	.033	.162
Δ R square	.001	.000	.041***	.136***

Statistical significance: * p<.05; ** p<.01; *** p<.001

Table 5. Results of parallel path mediation analysis - (H2b, H3b, H4b)

			<u>Mediation Analysis</u> (H2b, H3b, H4b)				
IV->MV->DV Comparative path model relationships	<u>a path</u>	<u>b path</u> Indirect 'ab' effect	<u>c path</u> Direct effect (without mediator)	<u>c' path</u> Direct effect (with mediator)	Causal steps method	Quantifying indirect effect via Bootstrapping (bias corrected percentile method)	Interpretation
<u>(H2b) Path Model 1</u> (IV) Per_ Values -> (MV) S. Social Cap-> (DV) Career Decidedness	$\beta=.267$ (p=.000) s.e. = 0.267	$\beta=.205$ (p=.006) s.e. =0.113	$\beta=.197$ (p=.003) s.e. = 0.058	$\beta=.143$ (p=.038) s.e.= 0.059	Partial mediation	Boot = .055 (p=.007) LCLI=0.016 UCLI =0.121	Indirect effect results supported by bootstrapping.
<u>(H3b) Path Model 2</u> (IV) Personal Values-> (MV) Access to Careers Resources-> (DV) Career Decidedness	$\beta=.211$ (p=.002) s.e.= 0.051	$\beta=.315$ (p=.000) s.e.= 0.078	$\beta=.197$ (p=.003) s.e. = 0.058	$\beta=.131$ (p=.046) s.e. 0.056	Partial mediation	Boot = .067 (p=.000) LCLI=0.027 UCLI =0.128	Partial mediation, supported by bootstrapping results. *Direct relationship (with mediator) nearly, but not quite dropping out of significance at (p<.05).
<u>(H4b) Path Model 3</u> (IV) Personal Values-> (MV) PSE Skills-> (DV) Career Decidedness	$\beta=.361$ (p=.000) s.e.= 0.042	$\beta=.232$ (p=.003) s.e.= 0.12	$\beta=.197$ (p=.003) s.e. = 0.058	$\beta=.114$ (p=.112) s.e.= 0.062	Full mediation	Boot = .084 (p=.002) LCLI=0.032 UCLI =0.162	Indirect effect results supported by bootstrapping.

***Based on analysis of standardized values and bootstrapping analysis in AMOS. Bootstrapped results based on 5000 resamples at 95% confidence levels. Bias corrected percentile method applied. As LCLI and UCLI Boot confidence limits did not traverse zero, results are deemed valid.**

Table 6. Additional mediation analysis - H5(a,b) and H6 (a,b)

IV->MV->DV Comparative path model relationships	<i>a path</i>	<i>b path</i> Indirect 'ab' effect	<u>Additional Mediation Analysis</u> (H5a,b) (H6a,b)				
			<i>c path</i> Direct effect (without mediator)	<i>c' path</i> Direct effect (with mediator)	Causal steps method	Quantifying indirect effect via Bootstrapping (bias corrected percentile method)	Interpretation
<u>(H5a) Path Model 4</u> (IV) Personal Values -> (MV) S. Social Cap-> (DV) Access to Careers Resources	$\beta = .279$ (p=.000) s.e. = 0.041	$\beta = .184$ (p=.011) s.e. = 0.096	$\beta = .192$ (p=.004) s.e. = 0.051	$\beta = .165$ (p=.018) s.e. = 0.052	Partial mediation	Boot = .051 (p=.014) LCLI=0.009 UCLI =0.119	Indirect effect results supported by bootstrapping.
<u>(H5b) Path Model 5</u> (IV) Personal Values-> (MV) PSE Skills-> (DV) Access to Careers Resources	$\beta = .371$ (p=.000) s.e.= 0.042	$\beta = .323$ (p=.000) s.e.= 0.105	$\beta = .192$ (p=.004) s.e. = 0.051	$\beta = .096$ (p=.176) s.e.= 0.054	Full mediation	Boot = .120 (p=.000) LCLI=0.058 UCLI =0.214	Indirect effect results supported by bootstrapping.
<u>(H6a) Path Model 6</u> (IV) S. Social Capital-> (MV) Access to Careers Resources-> (DV) Career Decidedness	$\beta = .184$ (p=.011) s.e.= 0.096	$\beta = .25$ (p=.000) s.e.= 0.085	$\beta = .166$ (p=.024) s.e. = 0.111	$\beta = .120$ (p=.100) s.e.= 0.111	Full mediation	Boot = .046 (p=.012) LCLI=0.007 UCLI =0.123	Indirect effect results supported by bootstrapping.
<u>(H6b) Path Model 7</u> (IV) PSE Skills-> (MV) Access to Careers Resources-> (DV) Career Decidedness	$\beta = .323$ (p=.000) s.e.= 0.105	$\beta = .25$ (p=.000) s.e.= 0.085	$\beta = .202$ (p=.009) s.e. = 0.118	$\beta = .121$ (p=.13) s.e. = 0.122	Full Mediation	Boot = .081 (p=.002) LCLI=0.027 UCLI =0.165	Indirect effect results supported by bootstrapping.

***Based on analysis of standardized values and bootstrapping analysis in AMOS. Bootstrapped results based on 5000 resamples at 95% confidence levels. Bias corrected percentile method applied. As LCLI and UCLI Boot confidence limits did not traverse zero, results are deemed valid.**

