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Author(s)	Li, Yimeng; Chan, Kim Yin; Chernyshenko, Olexander; Low, Kin Yew
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Running head: Professional career aspirations and professionalism among university students

Professional career aspiration and professionalism among university students: A challenge of
professional development in the 21st century

Li, Yimeng, Nanyang Technological University, Singapore

Chan, Kim Yin, Nanyang Technological University, Singapore

Chernyshenko, Olexander, Nanyang Technological University, Singapore

Low, Kin Yew, Nanyang Technological University, Singapore

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Please address correspondence to: Li Yimeng (liyi0018@e.ntu.edu.sg) or Chan Kim Yin (akychan@ntu.edu.sg)

Abstract

Universities today play two important roles in the systematic development of future professionals: They influence both the students' entry into professional careers and the development of professionalism. Yet, the psychology of professional career entry and the development of professionalism among university students are not well-understood. This paper reports an empirical study of the nomological networks professional career motivation and (PCM) and professional attitudes, in relation to several professional outcomes of particular interest during the university education period. Specifically, we ask: can attitudinal professionalism be measured among university students? How is the motivation to pursue professional work related to having professional attitudes among university students? Using data collected from 873 undergraduates pursuing degrees leading toward accounting, teaching, banking and finance professions, we first develop a scale to measure professional attitudes among students. Next, we establish that while PCM better predicts professional career intention among students, professional attitudes are more associated with the students' professional identification and willingness to support transformation of the profession. We conclude that the motivation to be a professional does not necessarily related to having certain professional attitudes among university students and call for more empirical studies to understand the development of professionalism during the university period, particularly regarding to the attitudinal aspect. Research and practical implications of the findings are discussed.

The development of future professionals has received considerable attention in recent years (e.g. Boud & Hager, 2012; Elman et al., 2005; Evans, 2002, 2008; Reid & Melrose, 2004; Webster-Wright, 2009). With an increasing number of professional workers now educated and trained by higher education systems (Evetts, 2003), many professionals first receive their formal professional development from tertiary educational institutions such as universities. During this period, the universities particularly play two important roles in the professional development of nascent professionals (Damon et al., 2005): (1) they influence professional entry, the process where by students develop professional aspirations and choose to become professionals after graduation, (2) they affect the development of professionalism, which includes on both functional (e.g., knowledge, skills and expertise which relate closely to professional performance) and attitudinal aspects (e.g., ethics, ideology, motivations and commitments; cf. Evans. 2002). Universities therefore act as both (1) the gate keepers of who enters the profession by attracting the students to choose a specific field of study, and (2) the place where students are nurtured and inculcated to become future professionals.

At a psychological level, however, university students commonly choose to pursue a profession based on interests or the functional knowledge that they have acquired in the specific disciplinary, and it may seem secondary to them whether their professionalism has been developed attitudinally. Today, professions such as medicine seem concerned and are calling for more emphasis on the inculcation and measurement of attitudinal/behavioral professionalism, recognizing that focusing only on the functional aspect is not just sufficient (e.g. Wilkinson et al., 2009).

Although it seems important to understand the role of university education in professional development, most research on professionalism seems to focus on practicing professionals (e.g.

Bartol, 1979; Morrow & Goetz, 1988; Kalbers, & Fogarty, 1995; Pratt et al., 2006), there is hardly any empirical study on professionalism targeting at the nascent professionals, or professionals-to-be who are still undergoing tertiary level education. In fact, one can say that there is a lack of good theorizing on the psychology of professional development in general. Webster-Wright (2009), for example, examined the professional development literature and noticed that much of the literature only contains a description of professional development activities and delivery methods, without adequate empirical research. She observed that the available research focuses on specific factors affecting professional development (e.g. the program, learner, or context) rather than taking a holistic perspective to study the psychological process involved in the development of professionals. Therefore, there is a need to shift the research focus from the professional development programs and contents to the psychology of professional development at the individual level.

In our view, the lack of psychological models of professional development may result in faulty assumptions in practice, such as it may be assumed that a person who chooses to be a professional is equipped with necessary professional attitudes. Thus, in this paper, we attempt to examine two key psychological processes underlying professional development in the universities: one's motivation and choice to enter a professional career field, and the development and possession of the necessary function and attitudinal professionalism. The existing lack of empirical attention to both of these processes is probably because the study of each of these psychology processes has remained in separate streams of research. On one hand, vocational psychologists have studied the career decisions and choices among professionals for a long time (e.g. Wertheim et al., 1978; Callanan & Greenhaus, 1992; Arnold et al., 2006). On the other hand, the study of what the professions should be like, and the demonstration of the "ideal"

attitudes, values, and behaviors of a professional has remained within the field of sociology (e.g. Hall, 1968; Freidson, 2001; Evetts, 2003). We know of no empirical effort to examine the processes professional career entry and professionalism at its development at the psychological level.

The present study therefore aims to address the question as to understand whether professional career motivation is necessarily related to having certain professional attitudes among university students. Specifically, we empirically investigate the nomological network of the two major constructs in understanding the development of professionals among university students: professional career motivation (PCM) and professional attitudes, in relation to several professional outcomes of particular interest in the professional education period, namely professional career intention, professional identification and willingness to support professional changes. Our research is conducted as part of the development of a broad conceptual-theoretical framework to understand the key psychological processes involved in being and becoming a professional (see Figure 1; see also Chan et al.; 2014). This framework shows three contexts to operationalize professional behaviors: professional career (or becoming a professional, e.g., entry into professional career), professional community (or being a professional, e.g., socialization, identification, commitment), and professional work (or performing as a professional, e.g., meeting standards, making expert judgments, etc.). The present study focuses on the university education period, so we are only looking at the contexts and constructs that are related with becoming a professional, and being a professional of which may be operationalized during this period. The following part explains the constructs that are related with these two aspects.

Professionalism, PCM and Professional attitudes

Professionalism, as an outcome of professional development, develops during professional training and education (Leicht & Lyman, 2006). Evans (2002) has argued that professionalism has two different aspects: Functional and attitudinal. The functional aspect incorporates the procedure and content of the professional work, which is most directly related with one's performance. It usually reflects whether one is capable of fulfilling the professional work. The attitudinal aspect on the other hand includes people's attitudes and beliefs towards the profession and professional work, which reflects whether one is willing to conduct certain professional behaviors. Although Evans (2002) pointed out that both functional and attitudinal professionalism are important objectives of professional development, others (e.g. Hoffman, 1992; Sternberg & Ben-Zeev, 2001) have suggested that researchers and the practitioners are more likely to focus more on the functional aspect than the attitudinal aspect, and cognitive psychology has also produced models of how people develop expert skills. However, there exists a well-established body of research which has shown that the process of becoming a professional involves much more than simply passing examinations and being registered to practice (e.g. Dingwall and Lewis, 1983; Abbott, 1988). There is thus a need for good psychological research to understand the attitudinal/motivational aspects of professional development.

It is our belief that the attitudinal/motivational aspect of professionalism is more potent than functional aspect since it reflects the acceptance and commitment to the professional work, and is attainable only by "development", while functional aspect, on the other hand, may be attained by knowledge and skill acquisition. While the functional professional "body of knowledge" may be better standardized across programs via major textbooks on the subject, it is more likely that the development of attitudinal/motivational professionalism that will

differentiate various professional educational programs. Moreover, the attitudinal aspect is unique to the development of professionals compared to other kinds of career development.

Becoming a professional is a complex accomplishment which involves induction into a wide array of formal and informal norms which have to be both taught and learned. During this process of socialization, motivation, beliefs and attitudes towards the profession start to formulate, especially those related with professional ethics and ethos, which is not usually incorporated in other kind of careers. It is therefore important for organizational behavioral scientists to explore the role of and the factors that influence attitudinal aspect of professionalism (c.f. Snape & Redman, 2003; Blau et al., 2008).

As the attitudinal/motivational aspect of professionalism reflects whether one is willing to enact certain professional behaviors, two sets of behaviors are of particular interest to the universities. The first one is related with students' career entry/aspirations and choice to become professionals after graduation. The other is related with one's attitudes and beliefs towards the profession and professional work.

Recently, based on Kanter's (1989) three principal career forms – bureaucratic (or leader/managerial), professional and entrepreneurial, and Schein (1985)'s organizational career models, Chan et al. (2012) proposed a person-centered framework arguing that entrepreneurship, professionalism, and leadership (EPL) can serve as three key dimensions of subjective careers such that all individual careers can be defined as vectors in a three-dimensional subjective career space. In their definition, professional career motivation (PCM) is broadly related to the motivation for highly specialized, professional careers. Although Huber (1967) and Miner (1980, 1994) previously studied professional motivation in context of how it affects the specific behaviors of professionals in their workplace, Chan et al.'s (2012) is the first attempt in the

career literature to measure PCM as a generalized construct that cuts across different vocations. In this paper, we adopt their construct PCM and measurement to operationalize the motivation to pursue professional careers.

Researchers have empirically examined and operationalized professional attitude as a multidimensional construct at the individual level (e.g. Hall, 1968; Kerr et al., 1977; Bartol, 1979), which describes the extent to which a person subscribes to the ideal beliefs of a profession. In Hall (1968)'s work, 5 specific dimensions were adopted and measured to characterize professional attitudes: (1) using the profession as major reference, (2) belief in the public service, (3) need for self-regulation, (4) need for autonomy, and (5) sense of calling. Similarly, Kerr et al. (1977) also suggested 5 dimensions with minor differences in the title: (1) identification with the profession, (2) professional ethics, (3) belief in collegial maintenance of standards, (4) desire for professional autonomy, and (5) commitment to the profession. According to Hall (1968), a "real" professional should (1) affiliates with other members of the occupation, (2) be committed to the service of the public good, (3) advocates self-regulation for their work (4) demands autonomy in the provision of his/her services, and (5) be dedicated to the work even if fewer extrinsic rewards were available.

While educational institutions traditionally excel in the teaching and assessment of functional professionalism, it remains a question whether professional attitudes can be meaningfully measured among students. Although Hall (1968)'s professional attitudes may start to emerge during university, researchers have only used Hall's measure among practitioners, and we know of no studies that have measured professional attitudes among university students. Separately, professions such as medicine and accounting are also calling for greater emphasis on the inculcation and measurement of professionalism during professional development (e.g.

Wilkinson et al., 2009). Therefore, apart from the objective to examine the relationship between PCM, professional attitudes and several professional outcomes, another aim of this paper is to examine the feasibility and validity of measuring professional attitudes among university students as a prerequisite to study the relationship between professional attitudes and various professional outcomes. To do so, we also developed a scale to measure of the students' professional attitudes.

Research Model & Hypotheses: Nomological network for PCM & Professional Attitudes

PCM and professional attitudes, as attitudinal aspects of professionalism, are important constructs in their own rights. As part of understanding these constructs, it's important to establish a nomological network for PCM and professional attitudes.

Professional career intention. For the many university programs that exist to educate professionals, an important indicator program success is often whether the students would subsequently join the profession. Professional career intention indicates one's intention to pursue professional career (Chan et al., 2012).

As motivation is concerned with the direction, arousal, amplitude, and persistence of an individual's behavior (Campbell & Pritchard, 1976), and career motivation is proposed to be associated with career decisions (London, 1983). For students who are still undergoing university education, PCM, which is the career motivation specifically related with highly specialized professional careers, is believed to be the individual differences that affect their effort and persistence towards the decisions and behaviors associated with pursuing the professional careers.

Meanwhile, according to Hall (1968), those who possess the “ideal” attitudes towards professionalism are also likely to conform to the requirement of the profession and become professionals. Therefore, we hypothesize that:

H1: PCM is positively related with professional career intention.

H2: Professional attitudes are positively related with professional career intention.

Professional identification. A professional’s sense of oneness with his/her profession—his/her professional identification—reflects his/her perceptions of psychological contract with the profession (Hekman et al., 2009). Professional identification is of great importance to the profession because it reflects the possibility for recruiting and retaining the students as future professionals. London (1983) proposed that career motivations also reflect the person's career identity, insight into factors affecting his or her career, and resilience in the face of unfavorable career conditions. Meanwhile, when one holds certain beliefs that are “ideal” to the profession, he/she would perceive congruence with the profession and identify with the profession.

Therefore, we hypothesize:

H3: PCM is positively related with professional identification.

H4: Professional attitudes are positively related with professional identification.

Willingness to support professional transformation. Professionals constantly face challenges in their professions which demand for changes and transformations. One recent change that affects most of the professions would be the increasing exposure to entrepreneurship and managerialism (Freidson, 2001), which has greatly challenged the way that professions organize themselves. Despite these changes will increase competition and barriers in the professions, professionals with the “ideal” professional attitudes will be determined to overcome such challenges and help their professions to go through the transformation. As such, they are

more likely to support the transformations occurred in their professions and try to their best to adapt themselves to such changes. Hence, we hypothesize that:

H4: Professional attitudes are positively related with willingness to support professional transformation.

A summary of all the hypotheses is presented in Figure 2.

METHOD

Sample and Procedure

In order to demonstrate the generalizability of our model of outcomes of PCM and professional attitudes, we collected data from three samples from different professional fields (i.e. accounting, teaching, and finance). We chose these 3 professions as they represented different contexts of professions: accounting and teaching profession as established professions with relatively strict regulations and systematic institutions, and compared to teaching profession as part of the public sector, accounting is more commercialized. The finance profession, on the other hand, is a rising profession less professionalized in term of professional regulations, standards, and ethics.

An online survey was used to collect data from 873 undergraduate students from 3 different professional fields: accounting, teaching, banking and finance. Participants were paid SGD10 and recruited from various public universities in Singapore. Informed consent was obtained from all participants prior to the commencement of the study. After eliminating cases with questionable responses (e.g.. selecting 1 as a response across entire sections including reverse worded items), the final sample comprised 529 accounting students, 194 banking and finance students, and 150 teaching students. Of the respondents, 55.6% were female, and 88.7% were Singaporean. The average age of the students was 21.86 years (SD = 2.14 years).

Measures

Students' professional attitudes scale (SPAS). The professional attitudes items were developed by the researcher through refinement of Hall's (1968) scale. The results of the factor analysis and the scale characteristics within and across the various samples are described in the results section. Five-point Likert scales were used to measure the extent to which the students subscribe to students' professional attitudes: (1) using the profession as major reference (e.g. "I constantly keep up with the journals/publications in my field as part of my professional responsibility and obligation."), (2) belief in the public service (e.g. "My profession is essential for society."), (3) sense of calling (e.g. I should stay in this profession even if my income is somewhat below my personal expectations."), and (4) need for self-regulation and autonomy (e.g. "The professionals in my profession should have exclusive rights to judge the standard of their fellow professionals' work.").

Professional career motivation (PCM). In order to measure PCM, we used Chan et al.'s (2012) 9-item scale of professional career motivation (part of a broader framework of entrepreneurial, professional and leadership career motivation) to measure the extent to which a person wants to become a professional with each statement using a 5-point Likert scale. Example items are "I like to be highly specialized and experienced in a specific area of expertise", "If I stick to becoming professional in my field of study, I am guaranteed to make a good living" and "My parents hope that I will be a highly skilled professional in my chosen area of expertise". An overall score was obtained by averaging the responses to each item.

Professional career intention. This variable was measured using Chan et al. (2012)'s three items asking subjects about their career intention after graduation from the university. For

example, students were asked to rate the item “My main career goal is to be a technical expert, specialist or professional in my field of study.” based on a 5-point Likert scale.

Professional identification. We measured the extent to which the students identified with their professions and the professional groups by asking the extent of their agreement with these items: (1) “When I hear someone praising accounting professionals, it feels like a personal compliment”, (2) “Accounting profession’s successes are my successes”, (3) “Being an accounting professional is important to me”, and (4) “I am proud to announce that I am studying accounting” (The word “accounting” was replaced by “teaching” and “finance” in separate samples accordingly). These items were adapted from Hekman et al. (2009)’s professional identification scale.

Willingness to support professional transformation. As there was a national-wide transformation occurring to the accounting profession of Singapore, we also measured the accounting students’ willingness to support the transformation to their profession by asking the students to indicate whether they would be less or more willing to practice as an accounting professional if the transformation was compulsory. A 3-point Likert scale was used, ranging from 1 (*less willing*) to 3 (*more willing*). We did not measure this item among teaching and finance students as there were no significant transformations in these two professions.

RESULTS

As the measure of professional attitudes developed by Hall (1968) has never been used with student populations [and some of the items are not applicable or too ambiguous for university students (e.g. “I regularly attend professional meetings at the local level”, “A problem in this profession is that no one really knows what his colleagues are doing”)], we therefore report the development of a scale of the professional attitudes applicable to students prior to the

validation of the different constructs. This section thus contains two parts. Part 1 reports the development of the students' professional attitudes scales (SPAS) and the validation of all the measures that has been used in this study across our three samples. Part 2 reports the relationship between PCM, professional attitudes, and various professional outcomes.

Part 1: Development and Evaluation of Measures

Students' professional attitudes scales (SPAS)

Development of the item pool. Based on an empirical assessment of Hall's (1968) scale by Snizek (1972), we culled 25 items from Hall's original scale that we felt best reflected the domains of the different professional attitudes. Several of these items were modified for the student participants employed in our study (e.g. "I regularly attend professional meetings at the local level" was changed into "I want to be involved in social and networking events organized by the professional bodies and organizations") while ambiguous phrases are rephrased to better reflect the specific professional attitude (e.g. "A problem in this profession is that no one really knows what his colleagues are doing" was change into "The professionals in my profession should have exclusive rights to judge the standard of their fellow professionals' work" to reflect the need for self-regulation). We also generated some items as supplements to better depict the different professional attitudes (e.g. "I would gladly volunteer my time and expertise to supervise or mentor any student or novice attempting to join the accounting profession" as a supplementary item to using the profession as major reference; "For me, the primary purpose of all accounting professionals must be to protect the interests of the public" as a supplementary item to belief in public service).

SPAS scale construction using exploratory factor analysis (EFA). Principal Axis Factoring of the correlation matrix was first used to establish the appropriate number of factors underlying the 25-item professional attitudes measure in each of the three samples. Scree plots of eigenvalues suggested that four factors were sufficient to account for most of the variance in the data for the three samples. Promax rotation of a four-factor solution suggested that the four factors were (1) using the profession as major reference, (2) belief in the public service, (3) sense of calling, and (4) need for self-regulation and autonomy. Sixteen items that loaded highly and relatively constant in the same factor across all three samples were therefore selected to form four scales that corresponded to the four factors.

Principal Axis Factoring of the 13 items selected from the final revision of the scale showed that the first four factors accounted for 57.6%, 58.8% and 59.9% of the variance in the accounting, banking and finance, and teaching student samples respectively. Table 1 presents the 13 professional attitudes items and their factor loadings on the four factors for each of the three samples. Table 2 presents the correlation among the various measures in the study, while Table 3 presents the summary characteristics of the four professional attitudes scales and all other measures and indicators in the study for the three samples. All the professional attitudes scales had generally good internal consistency reliabilities, with alphas mainly between .62 and .79, except for the need for self-regulation and autonomy scale for the three samples, with alphas between .49 and .59.

Evaluation of factor structure using confirmatory factor analysis (CFA). AMOS 20 was used to examine the fit of the measurement model for the four professional attitudes in each of the three samples. Table 2 show that the not all the professional attitudes were positively correlated, therefore we did not consider a single-factor model for the four professional attitudes.

Table 4 present various indices of model fit (χ^2 , GFI, SRMR, RMSEA, AIC, NFI, CFI, and PNFI) for the measurement model tested in the three samples. The goodness of fit indices indicated that the measurement model of the four professional attitudes fit well in all three data sets. Therefore it is feasible to examine the relationship between the four professional attitudes and relevant constructs using this measure.

Establishing factorial equivalence across groups. In order to establish if the measurement model of four professional attitudes was invariant across the three samples, AMOS 20 was used to test a series of increasingly restrictive models against a baseline model (see Jöreskog, 1971; Byrne, 1998). The hypotheses tested proceeded in a logical and increasingly restrictive sequence as follows: (1) fit of baseline model where all parameters are freely estimated across groups; (2) fit of model with invariant factor loadings across groups, (3) fit of model with of invariant factor loadings and factor covariances across groups.

Table 5 presents goodness of fit indices for the models. The changes in chi-square compared to the baseline model were 31.67 with 18 *df* and 62.59 with 30 *df*, which were statistically significant ($p < .05$). However, this may be affected the sample size. While the other indicator of fit (i.e. GFI, SRMR, RMSEA, NFI, CFI, and PNFI) that were less affected by sample size showed that the measurement model of four professional attitudes were invariant across the three samples.

Evaluation of Professional Career Motivation Scale

A reliability test was performed on the original 9-items of the PCM scale using the three samples, and one item was dropped to improve the reliability of the scale. A CFA using AMOS 20 to compare the fits of the 9-item scale and the revised 8-item scale showed that the revised 8-item PCM scale provided better indices than the original 9-item version (see Table 6). The

goodness of fit indices (see Table 6) showed that the single factor model fit the data well in each of the three samples. Cronbach's alpha ranged from .70 to .76 in the three samples (see Table 3).

Table 7 presents the goodness of fit indices for the test of the invariance of the 8-item model across the three samples. The changes in chi-square compared to the baseline model were not significant, and the other indicators of fit (i.e. GFI, SRMR, RMSEA, NFI, CFI, and PNFI) also showed that the measurement model was invariant across the three samples.

Evaluation of Professional Identification Scale

AMOS 20 was used to fit a single factor model to the 4-item professional identification scales. The goodness of fit indices (see Table 6) showed that the single factor model fit the data well in each of the three samples. Cronbach's alpha ranged from .66 to .79 in the three samples (see Table 3).

Table 7 presents the goodness of fit indices for the test of the invariance of the 4-item model across the three samples. The change in chi-square compared to the baseline model was not significant for the model of invariant factor loadings and was significant for the model of invariant factor covariance; however, the other indicators of fit (i.e. GFI, SRMR, RMSEA, NFI, CFI, and PNFI) also showed that the measurement model was invariant across the three samples.

Discriminant Validity of Overall Measurement Model

AMOS 20 was used to test the discriminant validity of the 7 constructs that were commonly measured across all three samples (i.e. four professional attitudes scales, PCM scale, professional identification scale, and professional career intention scale). A model allowing for the 7 factors were first fitted to the data across all three samples (see the baseline model in Table 8). The goodness of fit indices showed that the 7-factor model did fit well to the data, providing some evidence for the discriminant validity of professional attitudes, PCM, professional

identification and professional career intention. Next, the invariance of the 7 factors was tested across the three samples (see also Table 8). Again, although the changes in chi-square compared to the baseline model were significant, which were probably affected by the sample sizes, the other indicators of fit that were less affected by sample size showed that the 7-factor model was invariant across the three samples.

Part 2: Relationship between Professional attitudes, PCM and professional outcomes

Using hierarchical regression analysis, the relationship between professional attitudes, PCM and various professional outcomes was tested individually for each of the professional outcomes (i.e. professional identification, professional career intention, and willingness to support professional transformation). These analyses allowed us to explore the different effects of professional attitudes and PCM on those professional outcomes.

To test the relationship between E&P efficacy and E&P motivation, a series of hierarchical regression analyses were conducted. We first entered age as a control variable. The impact of PCM was tested in model 2. In model 3, the various professional attitudes were entered into the equation.

The results for the hierarchical regressions are shown in Table 9. As can be seen from this table, PCM and professional attitudes are both predictors for professional identification, professional career intention, and willingness to support professional transformation. Specifically, PCM is significantly related to professional identification ($\beta = .37, p < .01$), and explains 14% of its variances. Among the professional attitudes, using profession as major reference, sense of calling, and need for self-regulation and autonomy are significantly related to professional identification ($\beta = .37, .15, \text{ and } .09, p < .01$) and can explain another 17% of the variances. When professional attitudes are entered into the model, the regression coefficient for

PCM drops to $\beta = .23, p < .01$. This suggests that professional attitudes partially mediate the relationship between PCM and professional identification. Hypothesis 3 is supported and hypothesis 4 is partially supported. However, 30% of the variances among professional career intention can be explained by PCM ($\beta = .54, p < .01$), while among all the professional attitudes, only using profession as major reference is significantly related to professional career intention, $\beta = .15, p < .01$, and it only contributes to 2% more of the variances. Hypothesis 1 is supported and hypothesis 2 is partially supported. PCM is also significantly related to willingness to support professional transformation ($\beta = .12, p < .01$), but when professional attitudes are entered into the model, the regression coefficient are not significant. Using professions as major reference and sense of calling are significantly related willingness to support professional transformation ($\beta = .27$ and $.12, p < .01$) and can explain 9% of its variances. This indicates that these professional attitudes mediate the relationship between PCM and willingness to support professional transformation. Hypothesis 5 is partially supported.

DISCUSSION

Recognizing how universities' influence both the students' entry into professional careers and the development of professionalism, this study has tried to address the fundamental question whether the university students' motivation to pursue professional work is related to having professional attitudes among universities. Specifically, we examined the nomological network of the two major constructs in understanding the development of professionals among university students: professional career motivation (PCM) and professional attitudes.

The empirical results show that both constructs play important roles in the development of professionals. While as PCM better predicts professional career intention, professional attitudes are more associated with the students' identification with the profession, and

willingness to support transformation to the profession. This also suggests that the psychology of who aspires to be professional may be quite separate from who develops necessary attitudes towards the profession as they have different consequences during the university period. This in turn supports our proposed broad conceptual-theoretical framework for the psychology of professionalism which distinguishes professional career entry processes from that of professional community (including socialization, identification & commitment) processes.

Professional career entry is critical for the very survival and renewal of professions. In a more and more protean and “boundaryless” global economy, people are increasingly adopting a personal values-driven, self-directed attitude toward career management resulting in greater mobility (Arthur, 1994; Arthur & Rousseau, 1996; Hall et al., 1996; Briscoe et al., 2006). Thus, universities, as the gate keepers of who enters the profession by attracting the students to choose a specific field of study, must pay extra attention on how to develop the students so that they would like to retain in the professional community despite of all the alternative career options.

Professions, as communities, usually have these characteristics (Goode, 1957): (1) sense of identity from the members; (2) commitment and continuity from most of the members; (3) common value from the members; (4) clear role definitions and standards for the members; (5) common language exclusively in the field; (6) power from the community over the members (7) clear boundaries; (8) transmission of the ideology through training and socialization process. Professional identification and commitment from the professional members are critical for professional community to survive. In fact, in recent years, many professions are suffering from a high attrition rate, especially among early career professionals, which may cause a shortage of professionals when the veteran professionals need to be replaced. For example, Manuel (2003) reported that in recent years 20%, and in some areas up to 50%, of early career teachers chose to

end their careers - to leave the profession - in their first three to five years of service (Hardy, 1999; Ramsey, 2000; Ewing, 2001; Ewing & Smith, 2003). And similar problems also happen in the pharmaceutical industry (Kola & Landis, 2004) and the nursing area (Dosch et al., 2008). These facts also supports our findings that the psychology of who aspires to be a professional may be separate from who develops necessary attitude and commitment to the profession.

In the current study, we also developed the SPAS scales which indicate that professional attitudes can be reliably measured among students. This suggests that the attitudinal aspects of professionalism may have started to develop during the university period where the students first receive formal professional education.

Contributions and implications

Our research has at least four theoretical / conceptual contributions. Firstly, our research empirically tested a part of a broad conceptual-theoretical framework to understand the key psychological processes involved in professional entry and staying in the professional community (see Figure 1). The framework incorporates three contexts to operationalize professional behaviors: professional entry, professional community, and professional work / performance, which serves as a fundamental tool to understand the processes and constructs that matters in the study of professionalism. Although our study only focuses on the university period, future studies can explore what are the important constructs that are relevant to professional work / performance. Moreover, the framework also suggests us that alternative career logics (i.e. entrepreneurial ship and managerialism / leadership) have impact individuals' professional behaviors, future studies could examine how these alternative career logics would influence professionals.

Secondly, this is the first study that bridges the gap between vocational psychologists' effort to study career choice and sociological theorists' attempt to understand professionalism from the attitudinal aspects. It integrates the constructs from both fields and has the potential to contribute to the professional development literature. For example, scholars on professionalism from different professions tried to understand what makes a professional different from other individuals. Several important questions emerge: where does professionalism come from? What has been developed during the university education period as part of professional development process? By understanding the construct of PCM and professional attitudes, the nomological network offers the first step to test what has been developed during the university period as a start of professional development. Future study may employ longitudinal design to explore the development of PCM and professional attitudes during the university period.

Thirdly, we develop the Students' Professional Attitudes Scales (SPAS) based on Hall's (1968) professional attitudes scale, which serves as a first empirical attempt to measure professional attitudes for student sample, and suggests that the study of professionalism should and can be studied from the university education period. Evans (2008) address the significance of understanding attitudinal development so as to enhance the effectiveness of professional development initiatives or policy, the SPAS offers a measurement tool as the first step toward a better understanding of attitudinal development of future professionals.

Lastly, our results are tested across three professional disciplines with different contexts. And our measures, including the newly designed SPAS scale, also work across different professions. Future research could consider validating the results in other contexts.

Practically speaking, our study highlights a significant challenge of professional development the in 21st century: universities today play an important role in nurturing the human

resource of future professionals by shaping both their career aspirations and their attitudinal and functional professionalism. Any over-emphasis by universities on the functional aspects of professionalism and any short-term focus on helping their graduates to secure professional jobs without adequate attention to the development of attitudinal professionalism may weaken the profession and professionalism over time.

Meanwhile, researchers have argued that education in professional development schools appears to significantly foster graduates' entry into and persistence in their professional field (Latham & Vogt, 2007), and they also found that the candidates with higher academic achievements at school seems to have lower attrition rates, but there is not ample evidence to indicate the psychological process of it. Therefore, in order to maintain the quality of professionals and their works, the educators need to gain a better understanding on the psychology of professionalism by monitoring the students' professional career motivation and professional attitudes and their developed during the professional development process.

Limitations and future studies

Although professionals develop over time, one major limitation of the present studies is that it only relies on cross-sectional data; therefore we cannot examine what has been developed during the professional development process of university education. Future studies could adopt longitudinal designs to examine how universities may play a role in the development of professionalism in terms of the attitudinal aspects. Researchers can incorporate interventions that may impact individual variations in ones' professionalism using a pre- and post- intervention design.

Like any study, context also limits the generalizability of our results. We developed our scales and tested our nomological framework at a public university in Singapore. Future research

can verify the applicability of our SPAS scale and our results in other countries or cultures, and relate the constructs that matters in the university context to relevant workplace outcomes such as professional commitment, turnover intention, and professional performance.

Although we have revised Hall's (1968) scale of professional attitudes and developed SPAS, the challenge of developing students' attitudinal professionalism is further complicated by complex, dynamic changes in the forms and organization of professions and professionals (e.g. Evetts, 2009) which may demand new conceptualizations of professional attitudes beyond Hall's (1968) factors which apply to the traditional, "ideal-type" model of professions.

Overall, our research contributes to the literature on career aspiration and the development professionalism by theorizing and empirically examining the nomological network that related with PCM and professional attitudes during the university education period. We call for more longitudinal, psychological studies of the complex relationships between professional career motivations, intentions, entry and exit, and the development of professionalism among students, graduates and practitioners in service of strengthening professions and professionalism in society.

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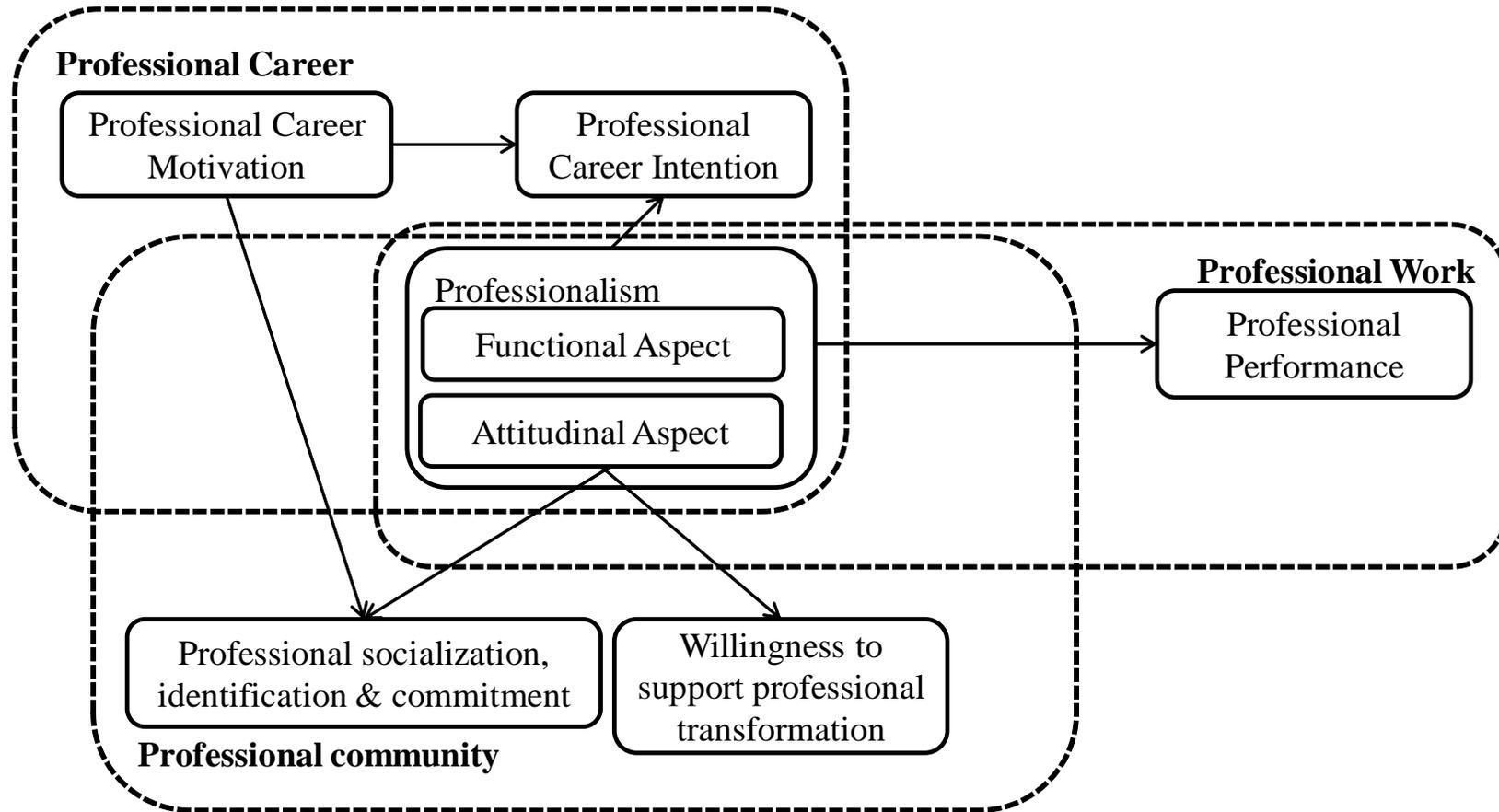


Figure 1. Contexts for Psychology of Professionalism: A Framework for Research

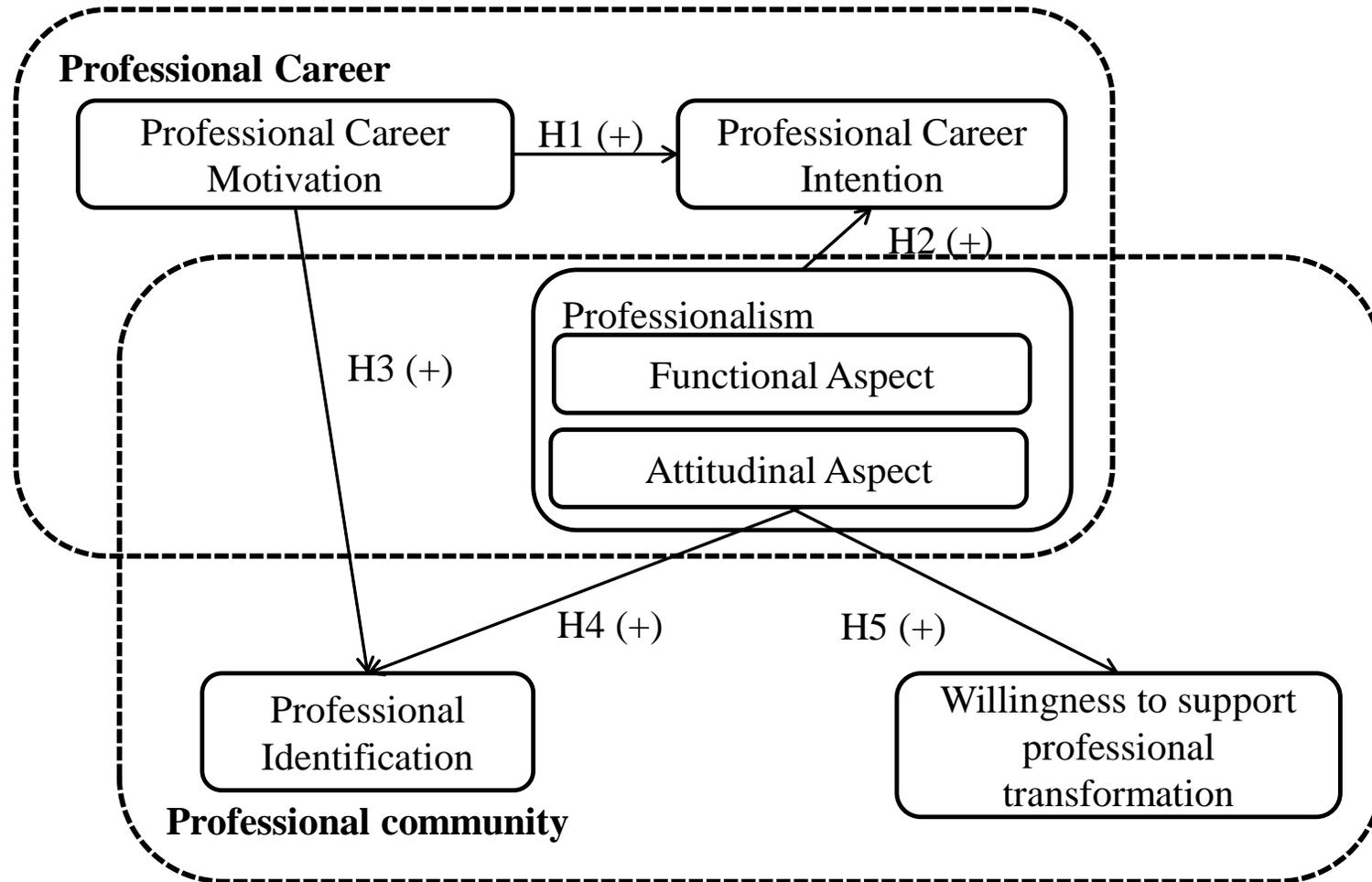


Figure 2. Summary of the Hypotheses

Table 1

Principal Axis Factoring with Promax Rotation of 13 Professional Attitudes Items from SPAS

Item	Sample												
	Accounting (n=479)				Banking and Finance (n=194)				Teaching (n=150)				
	F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4	
<i>Using the Profession as Major Reference Scale</i>													
1	I have an interest in supporting and being involved in the bodies and organizations of my profession.												
	.78	.06	.06	.02	.40	.26	-.02	.07	.88	-.06	-.08	.00	
2	I have an interest in participating in continuing education programs organized by the bodies and organizations of my profession.												
	.78	-.05	-.01	-.05	.66	.06	.01	-.09	.57	.17	.10	-.01	
3	I want to be involved in social and networking events organized by the bodies and organizations of my profession.												
	.71	-.02	.06	-.07	.83	-.16	.01	.01	.68	-.02	.06	-.03	
4	I constantly keep up with the professional journals/publications as part of my professional responsibility and obligation.												
	.47	-.06	-.17	.09	.41	.07	.08	-.02	.49	.01	.03	.02	
5	I love being around fellow members of my professional community.												
	.37	.14	-.08	.09	.58	-.02	-.08	.09	.41	-.01	-.19	-.03	
<i>Belief in the Public Service Scale</i>													
6	For me, the primary purpose of all professionals in my profession must be to protect the interests of the public.												
	-.04	.79	-.03	.00	.01	.75	-.07	.07	.02	.83	-.12	-.01	
7	In my view, all professionals in my profession must put the interest of the general public above that of their firms.												
	.05	.58	.03	-.01	-.01	.79	.04	-.07	.03	.54	.06	.12	
<i>Sense of Calling Scale</i>													
8	I should feel free to choose not to practice after obtaining my professional qualifications.												
	.02	.06	.77	-.06	.10	.08	.69	-.08	-.06	.24	.63	-.17	
9	I should feel free to quit my profession when there are little advancement opportunities.												
	-.02	-.04	.57	.09	-.07	-.06	.50	.15	.07	-.13	.66	.06	
10	I should not be compelled to remain in my profession if more attractive job opportunities are available outside the profession.												
	-.01	-.03	.52	.04	.00	-.05	.65	.00	-.05	-.10	.62	.01	
<i>Need for Self-regulation and Autonomy Scale</i>													
11	The professionals in my profession should take all matters relating to the profession in their own hands.												
	.02	.02	-.05	.53	.07	.03	-.14	.50	-.09	.07	-.09	.57	
12	The profession should have full rights for setting its own professional standards.												
	.02	-.06	.14	.51	-.02	-.14	.08	.67	.03	.04	.02	.50	
13	The professionals in my profession should have exclusive rights to judge the standard of their fellow professionals' work.												
	-.05	.03	.00	.47	-.03	.17	.11	.57	.07	.02	.32	.36	
Percentage of variance accounted for by 4 factors		57.6%				58.8%				59.9%			

Table 2
Correlations among Measures for Three Samples

Variable	1	2	3	4	5	6	7
Accounting Sample (<i>N</i> ranging from 422 to 479 after pairwise deletion)							
1 Using profession as major reference	-						
2 Belief in public service	.31**	-					
3 Sense of calling	.22**	.10*	-				
4 Need for self-regulation and autonomy	.19**	.16**	.03	-			
5 Professional career motivation	.41**	.20**	-.01	.17**	-		
6 Professional career intention	.39**	.14**	.11*	.13**	.57**	-	
7 Professional identification	.52**	.24**	.19**	.12**	.45**	.37**	-
8 Willingness to support professional transformation	.28**	.05	.18**	.05	.14**	.15**	.19**
Banking and Finance Sample (<i>N</i> = 194 after pairwise deletion)							
1 Using profession as major reference	-						
2 Belief in public service	.23**	-					
3 Sense of calling	.02	-.08	-				
4 Need for self-regulation and autonomy	.22**	.14*	.12	-			
5 Professional career motivation	.36**	.18*	-.05	.20**	-		
6 Professional career intention	.35**	.07	-.04	.05	.53**	-	
7 Professional identification	.49**	.18*	.11	.39**	.39**	.27**	-
Teaching Sample (<i>N</i> = 150 after pairwise deletion)							
1 Using profession as major reference	-						
2 Belief in public service	.29**	-					
3 Sense of calling	.09	-.10	-				
4 Need for self-regulation and autonomy	-.08	.13	-.19*	-			
5 Professional career motivation	.42**	.06	.02	.05	-		
6 Professional career intention	.36**	.06	.04	.01	.54**	-	
7 Professional identification	.37**	.06	.30**	-.12	.39**	.22**	-

Note. * $p < .05$. ** $p < .01$.

Table 4

The Fit of Measurement Model for the Four Professional Attitudes

Sample	χ^2	<i>df</i>	GFI	SRMR	RMSEA	AIC	NFI	CFI	PNFI
Accounting	105.69	59	.97	.042	.041	195.69	.91	.96	.69
Banking and Finance	96.68	59	.93	.067	.058	186.68	.81	.91	.61
Teaching	87.54	59	.92	.071	.057	177.54	.78	.91	.59

Note: GFI = goodness of fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; AIC = Akaike information criterion; NFI = normed fit index; CFI = comparative fit index; PNFI = parsimonious normed fit index.

Table 5

Tests of Factorial Invariance of Professional Attitudes Scales across Three Samples

Model	χ^2	<i>df</i>	GFI	SRMR	RMSEA	NFI	CFI	PNFI
Baseline Model	290.16	177	.95	.042	.028	.86	.94	.65
Invariant factor loadings	321.83	195	.95	.043	.028	.85	.93	.70
Compared to Baseline	31.67	18						
Invariant factor covariance	352.75	207	.94	.048	.029	.83	.92	.74
Compared to Baseline	62.59	30						

Note: Sample sizes for the three groups are $n = 479$ for accounting students, $n = 194$ for banking and finance students, and $n = 150$ for teaching students.

Table 6

The Fit of Measurement Model for Various Scales and Measures

Model	χ^2	df	GFI	SRMR	RMSEA	AIC	NFI	CFI	PNFI
Original 9-item Single-factor Professional Career Motivation Scale									
Accounting	130.44	27	.94	.064	.090	166.44	.85	.88	.64
Banking and Finance	104.36	27	.89	.088	.122	140.36	.66	.72	.50
Teaching	53.70	27	.93	.071	.081	89.70	.81	.89	.61
Revised 8-item Single-factor Professional Career Motivation Scale									
Accounting	96.22	20	.95	.059	.089	128.22	.89	.91	.63
Banking and Finance	87.10	20	.90	.087	.132	119.10	.69	.74	.50
Teaching	40.76	20	.94	.068	.083	72.76	.85	.91	.60
4-item Single-factor Professional Identification Scale									
Accounting	10.77	2	.99	.029	.096	26.77	.97	.98	.32
Banking and Finance	17.69	2	.96	.054	.202	33.69	.93	.93	.31
Teaching	15.23	2	.95	.071	.211	31.23	.84	.85	.28

Note: Sample sizes for the three groups are $n = 479$ for accounting students, $n = 194$ for banking and finance students, and $n = 150$ for teaching students. Original PCM scale has 9 items. One item was dropped based on the reliability test with all three samples.

Table 7
Tests of Factorial Invariance of Various Scales across Three Samples

Model	χ^2	<i>df</i>	GFI	SRMR	RMSEA	NFI	CFI	PNFI
Professional Career Motivation Scale								
Baseline Model	224.19	60	.94	.059	.058	.84	.87	.60
Invariant factor loadings	241.10	74	.93	.591	.052	.83	.87	.73
Compared to Baseline	16.92	14						
Invariant factor covariance	243.84	76	.93	.591	.052	.82	.87	.75
Compared to Baseline	19.65	16						
Professional Identification Scale								
Baseline Model	43.47	6	.97	.029	.088	.94	.94	.31
Invariant factor loadings	52.03	12	.97	.035	.064	.93	.94	.62
Compared to Baseline	8.56	6						
Invariant factor covariance	62.83	14	.96	.034	.065	.91	.93	.71
Compared to Baseline	54.27	8						

Note: Sample sizes for the three groups are $n = 479$ for accounting students, $n = 194$ for banking and finance students, and $n = 150$ for teaching students.

Table 8

Test of Full Measurement Model

Model	χ^2	<i>df</i>	GFI	SRMR	RMSEA	NFI	CFI	PNFI
Baseline Model	1,747.29	987	.87	.046	.031	.74	.86	.64
Invariant factor loadings	1,820.86	1,029	.86	.046	.031	.73	.86	.66
Compared to Baseline	73.56	42						
Invariant factor covariance	1,899.60	1071	.86	.048	.031	.72	.85	.68
Compared to Baseline	152.30	84						

Note: The measurement model include 7 factors (i.e. four professional attitudes, PCM, professional identification, and professional career intention; 4+1+1+1=7). Sample sizes for the three groups are $n = 479$ for accounting students, $n = 194$ for banking and finance students, and $n = 150$ for teaching students.

Table 9

Regression Results for Various Professional Outcomes

Predictor	Professional identification			Professional career intention			Willingness to support professional transformation	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2
Age	.11**	.10**	.01	.08*	.07*	.04	-.03	-.04
Professional career motivation		.37**	.23**		.54**	.49**		.12**
Using profession as major reference			.37**			.15**		
Belief in public service			.00			-.01		
Sense of calling			.15**			.01		
Need for self-regulation and autonomy			.09**			-.02		
R-Square	.01	.15	.32	.01	.30	.32	.00	.01
Adjusted R-Square	.01	.15	.31	.01	.30	.32	.00	.01
R-Square change	.01**	.14**	.17**	.01**	.30**	.02**	.00	.01**

Note: Sample size is n = 823 (479 accounting students, 194 banking and finance students, and 150 teaching students). Willingness to support professional transformation was only collected among accounting students.

* $p < .05$. ** $p < .01$.