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Perceived professional identity formation and influencing characteristics among speech pathology students

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Abstract

While professional identity formation (PIF) is an important facet of employability and becoming a health professional, there has been little research on PIF among speech pathology (SP) students. This single group, cross-sectional study explored perceived PIF among SP students at a large, urban, Australian university selected via stratified sampling from a four-year undergraduate program. Using an established online self-assessment tool to measure perceived employability, the study reports on seven related constructs relevant to PIF. The self-assessment has previously been found to have strong validity and reliability and the subset used in this study likewise had strong validity and reliability. There were 84 participants and the PIF constructs were: self and program awareness (SPA); identification with commitment (IC); reconsideration of commitment (RC); self-esteem (SE); perceived program relevance (PPR); career exploration and awareness (CEA); and ethical and responsible behaviour (ERB). Descriptive and multivariate statistics were used to estimate the proportion of variance for year level and individual characteristics for each construct and overall PIF. Perceived professional identity increased from first to fourth year, significant only for SPA, IC and PPR constructs. Students aged over 25 years self-rated significantly higher on ERB than younger students, as did students studying part-time compared to those studying full-time. Participants not engaged in paid work had significantly higher SE than those who were working, as did students from low socio-economic status (SES) compared with medium or high SES students. No differences were found for other individual characteristics, although some group sizes were very small. Recommendations to enhance PIF include incorporating a range of reflective activities, assertiveness training and opportunities to explore ethical dilemmas within the curriculum.

Keywords
professional identity formation, speech pathology, perceived employability, higher education

Introduction

Professional identity is a strong sense of being in or belonging to a profession, including having the knowledge, skills and attributes of the chosen career (Jackson, 2017). Professional identity contributes professional meaning and purpose, shapes a health professional's work attitude, affect and behaviour,

and supports wellbeing (Caza & Creary, 2016). Having a strong professional identity can increase a health professional's self-confidence and job satisfaction, have a positive impact on the recruitment and retention of staff (Cornett et al., 2023; Fitzgerald, 2020; Wilson et al., 2013), reduce stress and burnout (Sabanciogullari & Dogan, 2015) and enhance patient safety (Fitzgerald, 2020).

Investigations of the formation of professional identity among student health professionals has received increased attention over the past decade as the relationship between identity and graduate employability becomes clearer (Bennett, 2018; Jackson, 2017). Professional identity formation (PIF) is important not only in the development of graduates' employability skills; in health professional education it is crucial to 'internalizing a deep responsibility to the person being served' (Hamilton, 2012, p. 15). The Carnegie Institute (Irby, 2011) has recommended that educational providers focus on PIF, with Wilson and colleagues (2013) considering it as equally important to graduates' development of knowledge and skills.

Further, PIF develops over time in an ongoing process (Bennett, 2018; Caza et al., 2018; Jackson, 2017; Wilson et al., 2013) and needs to be explicitly taught and discussed with students (Trede, 2012). Aspects of PIF that are especially important for health professionals include: self-awareness (Hamilton, 2012; Jackson, 2017; Wilson et al., 2013); a commitment to or identification with the profession (Fitzgerald, 2020; Hamilton, 2012; Jackson, 2017; Wilson et al., 2013); self-esteem (Iacobucci et al., 2013; Jackson, 2017); and alignment with the ethics of the profession (Fitzgerald, 2020; Hamilton, 2012; Iacobucci et al., 2013; Jackson, 2017; Wilson et al., 2013).

PIF has a limited research base (Jackson, 2017; Tomlinson & Jackson, 2021; Trede et al., 2012; Wilson et al., 2013), especially within the discipline of speech pathology (SP) (Lewis et al., 2023). As some differences have been found in how employability and professional identity form among students in different disciplines (Bennett et al., 2020; Bennett, Knight, Koshy, & Li, 2021; Kercher et al., 2024), it is important to study PIF at the discipline level. A recent systematic literature review of PIF among allied health students found that only two studies included SP students (Lewis et al., 2023). One of these, a qualitative study, interviewed both final year SP students and new graduates and reported naïve understandings of the role among students, who tended to be self-centred and exhibited dependency, compared to new graduates who were self-sufficient, patient-centred and demonstrated nuanced understandings of their responsibilities (O'Leary & Cantillon, 2020). The other quantitative study explored self-perceived professional and interprofessional identity among a range of undergraduate health profession students and reported an increased professional identity rating from the start to the end of first year for all four SP students (Tong et al., 2020). In addition, regardless of discipline, a further study found the training site can make a significant difference to PIF ratings (Ogawara et al., 2009), implying that the curriculum at an individual training institution can influence the extent to which PIF can be developed among students.

For each individual, professional identity sits alongside multiple identities, such as gender, ethnicity and social class, and these identities interact in complex ways, including in a hierarchy and through intersectionality (Monrouxe, 2015). Intersectionality looks at how multiple identities relate to each other and how each may confer advantages or disadvantages in the workplace (Caza et al., 2018; Leedham-Green et al., 2020; Monrouxe, 2015). The influence of these various identities or other individual characteristics on PIF appears to have been rarely studied (Leedham-Green et al., 2020; Lewis et al., 2023; Tomlinson & Jackson, 2021; Wyatt et al., 2020) to the extent that PIF research has been accused of having a sociocultural bias (Volpe et al., 2019). Volpe and colleagues (2019) assert that, if PIF studies do not examine how minority identities experience PIF, they could be perpetuating the assumption that all health professionals are white, middle-class and English-speaking and, thus, form their professional identity in the same way.

Health professions are increasingly striving to be diverse in terms of gender, ethnic and racial background (Greenhill, 2023) to fully represent the communities they serve. It is important, therefore, to examine the influence of individual characteristics on a graduate's employability and PIF (Caza et

al., 2018; Gill et al., 2024; Monrouxe, 2010; Wyatt et al., 2020). Studies have previously shown that students from minority and/or disadvantaged groups (i.e., students with disabilities, wellbeing concerns, having English as a second language, from regional or remote areas, from low socioeconomic status (SES) backgrounds and/or Indigenous students) can experience lower perceived employability (Gill et al., 2024; Pitman et al., 2019). Disadvantage can persist across the lifespan (Bennett, 2018; Greenhill, 2023) and students from one or more of these groups may find it more difficult to fit into their health profession community (Attrill et al., 2022; Monrouxe, 2010) and experience imposter syndrome (Volpe et al., 2019) because their personal and professional identities are in tension (Miscenko & Day, 2016).

There are only a small number of studies to have investigated the influence of individual characteristics on PIF in the health professions, including characteristics which indicate disadvantage, and some PIF differences have been found. One study on identities with students in a general higher education program found students' individual identities and how closely aligned their identity was with the teacher influenced the extent of their participation in contentious discussion topics. Students from minority groups did not feel safe to express their opinion, indicating that power and privilege of the dominant identity groups impact students' learning (Parker-Shandal, 2023). Different cultural groups have been found to have different professional identity scores among occupational therapy and physiotherapy students (Coster et al., 2008). This same study found gender differences as well, where males had lower mean scores than females for professional identity across a range of health disciplines (Coster et al., 2008). However, in a study with occupational therapy students, no gender differences were found (Boehm et al., 2015). Another study with podiatry students found that males did not discuss professional identity in pre-placement discussions whereas females did (Ellis et al., 2012). A study of physiotherapy students found preferences for future work varied based on gender (Öhman et al., 2002), and this was consistent with findings of a study of dietetic students (Brady et al., 2012). Finally, in a study mentioned earlier, no differences were apparent for the individual characteristics of age, regionality or type of enrolment on professional identity scores (Coster, et al., 2008).

Given the aspects of PIF explored above, this study sought to examine SP students' PIF across a four-year undergraduate program, with two underlying research questions:

- RQ1 How does professional identity form over a four-year speech pathology program?
- RQ2 How is PIF influenced by individual characteristics?

Methods

Study design

The study employed a single group, cross-sectional design (Mann, 2003) with stratified sampling (Sharma, 2017) of completed online surveys. Quantitative studies are less common than qualitative studies in explorations of professional identity, and there have been calls for more quantitative analysis (Caza et al., 2018). The study was designed and implemented following international guidelines including Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement (von Elm et al., 2014) and the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) (Eysenbach, 2004).

Ethical Considerations

Ethical approvals were obtained from the human ethics committees of Curtin University, where the first author was an HDR student, and Edith Cowan University, where the students were recruited prior to data collection (HRE2018-0336 and 20890LEWIS, respectively). The data used in this study was a subset from a much larger Employ-Ability survey dataset held by Bond university (with ethics approval), which can be used in ethically approved research projects at other institutions that request

access to de-identified data when consent is given within the survey. This large dataset held by Bond university has an established protocol to add linked demographic and biographical data from any university's enrolment records. Thus, in the present study, this involved an independent data manager (from Bond university) linking university (ECU's) data to the list of student identity numbers (given by students in the ECU survey) before combining it with the larger existing Bond dataset and deidentifying the new dataset.

Participants and recruitment

Participants were students enrolled in the Bachelor of Speech Pathology program at a large, urban university in Australia. Students were invited to participate in a larger study via an in-class announcement and detailed information available on a program-wide learning management system. Completing the online self-assessment of perceived employability was one way to voluntarily participate in the study and this was advertised by announcements with the survey link emailed to all students at least twice each semester in 2018, 2019 and 2020. Completion of the online survey was incorporated into the program to support students' employability skills development and set as a pre-reading activity for a careers workshop held for each cohort in semester two each year. Within the self-assessment, students had the option of allowing their de-identified data to be used for research purposes by ticking a box. The survey link was available to students throughout the data collection period.

Employ-Ability survey

The study employed an established online survey called the Employ-Ability self-assessment (Bennett & Ananthram, 2022), freely available online. The purpose of Employ-Ability is to assess self-management, self-efficacy, self-awareness, emotional intelligence, graduate skills and attributes, career decision-making and career confidence, which can be considered as representative of a student's perceived employability. Completion of the survey by a student provides them with a personalised profile report, including tailored activities and embedded links to developmental resources. The survey instrument includes open-ended and structured (Likert scale) response fields.

Employ-Ability (Bennett & Ananthram, 2022) has been widely used (Ananthram et al., 2024; Bawa et al., 2024; Bennett, Bawa, & Ananthram, 2021; Bennett et al., 2020; Brosnan et al., 2024; Gill et al., 2024; Kercher et al., 2024) and is based on previously published scales so it encompasses aspects such as metacognition, efficacy and agency, reflexivity, self-regulation, discipline understanding and generic skills such as communication and ethical behaviour (Bennett & Ananthram, 2022). The survey instrument includes questions that gather demographic data (relevant for RQ2), as well as 134 items with Likert-style scales where students rate the extent of their agreement (or disagreement), or their perceived level of confidence, with a range of statements (relevant for RQ1). Questions are presented in a randomised order to minimise potential bias.

The instrument has been validated on over 10,000 students, with exploratory and confirmatory factor analyses identifying fourteen factors or constructs with good reliability indicated by a measure of above 0.7 using Cronbach's alpha coefficient for each construct (Bennett & Ananthram, 2022). Composite reliability indicated internal consistency, and the average variance and maximum shared variance calculations demonstrated no validity concerns (Bennett & Ananthram, 2022). Reliability and validity were confirmed in subsequent studies with thousands of students (Ananthram et al., 2024; Bawa et al., 2024; Brosnan et al., 2024; Gill et al., 2024; Kercher et al., 2024). As differences in self-rating individual constructs have been reported in different disciplines (Kercher et al., 2024), individual constructs merit further examination.

The purpose of this study was to explore PIF in SP students, so, of the fourteen constructs within the measure, seven were chosen as aspects of or related to PIF for use in this study, drawing on a wide range of studies that had found these aspects important in PIF (Table 1).

Table 1: The seven constructs of the Employ-Ability included in this study

Construct*	Definition* Student is…	Studies highlighting the relevance of choosing this construct to measure PIF
Self and program awareness (SPA)	Aware of personal strengths and areas for improvement, and how the degree is preparing them for work.	Hamilton, 2012; Jackson, 2017; Wilson et al., 2013.
Identification with commitment (IC)	Secure and confident when thinking of becoming a professional in the discipline.	Fitzgerald, 2020; Hamilton, 2012; Jackson, 2017; Wilson et al., 2013.
Reconsideration of commitment (RC)	Considering alternative choices of career to the current discipline.	Fitzgerald, 2020; Hamilton, 2012; Jackson, 2017; Wilson et al., 2013
Self-esteem (SE)	Aware of own worth, value and achievements.	Iacobucci et al., 2013; Jackson, 2017.
Perceived program relevance (PPR)	Recognising the relevance of the curriculum to the workplace.	Hamilton, 2012; Jackson, 2017; Wilson et al., 2013.
Career exploration and awareness (CEA)	Confident in choice of career to suit their personality, values, skills and interests.	Hamilton, 2012; Jackson, 2017; Wilson et al., 2013.
Ethical and responsible behaviour (ERB)	Ethical and responsible behaviour at work and in the community.	Fitzgerald, 2020; Hamilton, 2012; Iacobucci et al., 2013; Jackson, 2017; Wilson et al., 2013.

Note: *adapted from Bennett and Ananthram (2022).

Response sample

Across the three survey years (2018-2020), the final data set included 139 responses from 84 students, with 36 students (42.85%) having more than one survey response (range 1-4, mean 2.2). Most surveys were collected in 2018 (55%), with 25% collected in 2019 and 20% in 2020. The overall response rate was 35%, although this varied across study years, with 14% being first year student responses, 25% second year student responses, 40% third year and 80% fourth year. To select the final sample, duplicates were removed for each student (based on student code number), retaining only the first occurrence of survey completion (n = 84). This gave an overall response rate of 24%, with 13% being first year student responses (n = 14), 22% being second year (n = 22), 27% third year (n = 22) and 39% fourth year (n = 26).

Analysis

Data were analysed using IBM SPSS Statistics (Version 29) for both descriptive and multivariate analyses.

RQ1 Professional identity formation across the program

Descriptive statistics were used to summarise the average and standard deviation for question responses, construct responses and cohort responses across year of study. Part-time students were allocated to Year 1-4 based on the year level of units of study being completed. Any student completing units from more than one year level was allocated to the year of the most advanced units (for example, a student completing a unit from Year 2 and two units from Year 3 was recorded as a Year 3 student). An independent sample t-test was used to compare means for study years 1 and 2, with then study years 3 and 4. Multiple linear regression estimated the proportion of variance that year level (as well as each individual characteristic) would have on each construct (see RQ2).

RQ2 Influence of individual characteristics

Individual participant characteristics were summarised using descriptive statistics (Table 2). One participant was missing SES data, and one was missing weighted average mark (WAM), therefore, as recommended by Bannon (2013), the overall mean was calculated and used to fill the missing data and recalculation of the means showed no change. For six participants, first in family (FiF) data was missing so these participants were not included in the FiF group in the linear regression analysis. Independent sample t-tests were used to compare means for the following: age of 25 years or below with above 25 years; working with not working; low SES with medium or high SES; non-English speaking background (NESB) with none; FiF with not FiF; WAM above 70 with below; and full-time study load with part time.

To estimate the proportion of variance that each individual characteristic (as well as year level) would have on each construct, a multiple linear regression analysis was performed. Dummy variables were created for years of study (Year 1 or not; Year 2 or not; Year 3 or not); SES (low or not; medium or not); work status (working or not). The variables used in the regression, therefore, were Year 1, Year 2, Year 3, age, study load, low SES, medium SES, not working, NESB and WAM.

Results

Participant characteristics

Table 2, overleaf, summarises the participants' characteristics by individual cohort and overall sample (n = 84). Most students were female (95%), born in Australia (74%), living in urban areas (93%), English speaking (92%) and of high SES (60%). Five students spoke a language other than English. Across 2018-2020, there no Aboriginal students and only three international students in the whole program so this information was not collected in the linked data.

All participants answered all the survey questions and the resultant study size of 84 was considered sufficient for various statistical analyses including linear multiple regression in G*Power (0.99) (Faul et al., 2009). For factor analysis, 80 is considered an acceptable sample size (Mundfrom et al., 2005) and G*Power (Faul et al., 2009) showed that 84 gave sufficient power for correlation analysis (0.81). Therefore, the response sample of 84 was judged to be adequate for the statistical analyses in the study. However, in the regression analyses, the sample was stratified into small groups which could impact the validity of the results.

Validation of the survey

To confirm that all constructs were unidimensional, data from the 84 participants were subjected to principal axis factoring with ProMax rotation (Allen et al., 2014). Before parametric analysis, the data were assessed for normality by examining the histograms, normal Q-Q plots and detrended normal Q-Q plots, which indicated normal distribution. Analysis of the skew index and kurtosis index showed the data to be within the parameters for analysis by parametric tests (Kline, 2010). No skew index was above +/- 2.255, with the majority below +/- 1.5 (92%), and no kurtosis index was above +/- 5.429, with the majority +/-1.5 (81%) (see supplementary file). During the validation analysis, two questions were problematic and, thus, were removed, leaving 36 questions (in supplementary file). As expected, and in line with the validity of the larger instrument, seven constructs were identified accounting for 70.17% of the variance. Each question loaded on to one construct (see supplementary file).

Table 2: Participant characteristics by cohort (n=84)

		First year (*n*=14, 16.7%)		Second year (*n*=22, 26.2%)		Third year (*n*=22, 26.2%)		Fourth year (*n*=26, 31.0%)		Total (*n*=84, 100%)	
Variable	**Subgroups**	**Mean (range)**	**SD**	**Mean (range)**	**SD**	**Mean (range)**	**SD**	**Mean (range)**	**SD**	**Mean (range)**	**SD**
Age in years		31.71 (18-53)	12.11	26.86 (19-45)	9.52	32.68 (20-49)	10.87	30 (21-46)	8.73	30.17 (18-53)	10.19
WAM		71.08	12.83	67.39	8.62	72.07	9.10	68.22	6.94	69.49	9.16
Variable	**Subgroups**	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**	**n**	**%**	**n**	**%**
Gender	female	12	85.7	21	95.5	22	100	25	96.2	80	95.2
	male	2	14.3	1	4.5	0	0.0	1	3.8	4	4.8
Disability	yes	1	7.1	1	4.5	1	4.5	1	3.8	4	4.8
	no	10	71.4	18	81.8	19	86.4	20	76.9	67	79.8
	unknown	3	21.4	3	13.6	2	9.1	5	19.2	13	15.5
NESB	yes	0	0.0	3	13.6	0	0.0	2	7.7	5	6.0
FiF	yes	11	78.6	7	31.8	12	54.5	14	53.8	44	52.4
	no	1	7.1	12	54.5	9	40.9	12	46.2	34	40.5
	unknown	2	14.3	3	13.6	1	4.5	0	0.0	6	7.1
Study load	full-time	9	64.3	17	77.3	15	68.2	19	73.1	60	71.4
SES	high	7	50.0	14	64	11	50	18	69	50	59.5
	medium	5	35.7	7	31.8	8	36.4	8	30.8	28	33.3
	low	2	14.3	1	4.5	2	9.1	0	0.0	5	6.0
	unknown	0	0	0	0	1	4.5	0	0	1	1.2
Work status	not working	6	42.9	5	22.7	7	31.8	10	38.5	28	33.3
	part-time	4	28.6	7	31.8	8	36.4	5	19.2	24	28.6
	casual	3	21.4	10	45.5	7	31.8	9	34.6	29	34.5
	full time	1	7.1	0	0.0	0	0.0	2	7.7	3	3.6
Regionality	urban	13	92.9	22	100.0	20	90.9	23	88.5	78	92.9
	regional	0	0.0	0	0.0	1	4.5	3	11.5	4	4.8
	remote	1	7.1	0	0.0	0	0.0	0	0.0	1	1.2
	unknown	0	0.0	0	0.0	1	4.5	0	0.0	1	1.2
Born overseas*		3	21.4	6	27.2	8	36.3	5	19.1	22	26.3
Spoken language other than English**		0	0	3	13.6	0	0	3	11.3	6	7.2

Note: *Countries: UK (12), South Africa (10), Malaysia (2), New Zealand (2), Brunei, Darussalam, Germany, India, Ireland, Serbia, Singapore and Suriname.
**Languages: Afrikaans (2), Hindi (1), Spanish (1), Arabic (1) and Dutch (1).

Reliability of survey instrument

As this study used a subset of questions from the Employ-ability survey, the internal consistency or reliability of the questions used was confirmed using Cronbach's Alpha and this was 0.93, staying above 0.92 regardless of which question was removed. Reliability was further confirmed on the seven constructs with Cronbach's Alpha being 0.73, with little change if any construct was removed as shown in Table 5. A score above 0.7 is acceptable (Allen et al., 2014).

Construct relationships

The seven constructs of the survey were self and program awareness (SPA); identification with commitment (IC); reconsideration of commitment (RC); self-esteem (SE); perceived program relevance (PPR); career exploration and awareness (CEA); and ethical and responsible behaviour (ERB). The size and direction of the linear relationship between the constructs of the survey was assessed using a bivariate Pearson's product-moment correlation coefficient (r). The relationship between most constructs was positive and strong (Table 3), with effect sizes being small (±0.2) to medium (±0.5) in strength (Sullivan & Feinn, 2012). RC was not significantly correlated with SE. PPR, or ERB. IC were not significantly correlated with ERB.

Table 3: Factor correlations for survey constructs

Constructs	SPA	IC	RC	SE	PPR	CEA	ERB
SPA	1						
IC	0.350**	1					
RC	0.294**	0.308**	1				
SE	0.429**	0.336**	0.117	1			
PPR	0.394**	0.343**	0.130	0.370**	1		
CEA	0.399**	0.392**	0.351**	0.437**	0.450**	1	
ERB	0.397**	0.060	0.168	0.246*	0.444**	0.276*	1

Note: **p = 0.01 (2-tailed) * p = 0.05 (2-tailed).

To further ensure the survey constructs were related and measured aspects of professional identity, standard multiple regression analysis was carried out using IC as the dependent variable, remaining constructs as independent variables. IC was chosen as the questions in this construct were taken from an earlier professional identity scale and incorporated into the instrument (Bennett & Ananthram, 2022). In combination, the remaining six constructs accounted for a significant 29.1% of the variability in IC, R2 = 0.291, adjusted R2 = 0.236, F (6, 83) = 5.279, p = <0.001. Unstandardised (*B*) and standardised (β) regression coefficients and squared semi-partial correlations (sr2) are shown in Table 4 below.

Table 4: Regression model predicting IC construct

Variable (*n* = 84)	*B* [95% confidence interval]	β	sr^2
SPA	0.183(-0.075, 0.441)	0.167	0.018
RC	-0.160(-0.011, 0.331)	0.196	0.032
SE	0.224(-0.126, 0.574)	0.145	0.015
PPR	0.311(-0.015, 0.637)	0.226	0.033
CEA	0.082(-0.048, 0.213)	0.152	0.015
ERB	-0.265(-0.536, 0.006)	-0.217	0.047

Taken together, the results for validity, reliability, correlation and linear regression indicate that the instrument is an appropriate tool for the measurement of self-perceived PIF undertaken for this study.

RQ1 Professional identity formation across the program

The response rate, described earlier, increased as students moved further through their studies closer to graduation. Table 5 (overleaf) shows students' perceived PIF across the program overall and for each construct; results for each question can be found in the supplementary file. The total score for all constructs was slightly higher for first year than second, then increased to a new high for third and fourth years. This pattern was similar for the individual constructs SPA, IC and CEA, with a slight dip for fourth year. PPR increased every year; RC and SE did not seem to change across the years; and only ERB climbs for fourth year.

When comparing means (using *t*-tests), year of study had a significant influence (p = 0.03) on the formation of professional identity as years 3 and 4 (M = 4.7, SD = 0.40) rated themselves higher than years 1 and 2 (M = 4.5, SD = 0.55). This was a medium effect size as shown by Cohen's d = 0.51. When looking at the individual constructs for year of study, this medium effect size was found only with SPA (d = 0.59), IC (d = 0.56), and PPR (d = 0.71). For the other constructs the difference was not significant.

RQ2 Influence of individual characteristics

When comparing means using t-tests, participants above 25 years (M=5.7, SD=0.46) rated themselves higher than participants 25 years or younger (M=5.3, SD=0.55) on the construct ERB. This was significant (p=0.005) with a medium effect size (d=0.63). However, there were no significant differences for the other constructs or the overall rating for age.

For participants who were not working, SE was rated higher (M=2.4, SD=0.39) than for those who were working (M=2.2, SD=0.41); a significant difference (p=0.008) with a medium effect size (d=0.63). However, differences were not significant for any other construct or for overall ratings.

Students with a part-time study load (M=5.7, SD=0.48) rated themselves higher for ERB than those with a full-time study load (M=5.4, SD=0.53); a significant difference (p=0.007) with a medium effect size (d=0.51). Again, however, differences were not significant for any other construct or for overall ratings.

There were no significant differences between groups on the overall rating of the survey or the rating of individual constructs for low SES compared with medium or high; coming from an NESB or not; being FiF or not; or having a WAM below 70 or higher (see supplementary material for all analyses).

Table 5: PIF across the program as self-perceived by students

Constructs (Cronbach's Alpha if construct removed)	**Study year(s)**									
	First		**Second**		**Third**		**Fourth**		**All**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Self and program awareness (SPA) (0.68) 6-point Likert-scale from 1 (strongly disagree) to 6 (strongly agree)	5.2	0.62	4.8	0.52	5.4	0.46	5.2	0.62	5.2	0.60
Identification with commitment (IC) (0.70) 5-point Likert-type scale from 1 (not at all) to 5 (very much)	3.7	0.73	4.0	0.54	4.3	0.54	4.2	0.72	4.1	0.65
Reconsideration of commitment (RC) (0.72) 5-point Likert-type scale from 1 (not at all) to 5 (very much), *reverse scored*	4.3	0.93	4.3	1.05	4.4	0.53	4.3	0.70	4.3	0.80
Self-esteem (SE) (0.70) 4-point Likert-type scale from 1 (strongly disagree) to 4 (strongly agree)	2.3	0.44	2.2	0.46	2.4	0.47	2.3	0.34	2.3	0.42
Perceived program relevance (PPR) (0.69) 5-point Likert-type scale from 1 (very poor) to 5 (very good)	4.1	0.45	4.2	0.49	4.3	0.42	4.6	0.42	4.3	0.47
Career exploration and awareness (CEA) (0.69) 9-point Likert-type scale from 0 (no confidence) to 9 (complete confidence)	7.1	1.72	7.1	1.24	7.6	0.99	7.5	1.00	7.4	1.20
Construct 7 Ethical and responsible behaviour (ERB) (0.7) 6-point Likert-type scale from 1 (strongly disagree) to 6 (strongly agree)	5.6	0.48	5.4	0.63	5.4	0.58	5.7	0.37	5.5	0.53
Total across all constructs (Overall rating)	4.5	0.60	4.4	0.53	4.7	0.38	4.7	0.42	4.6	0.48

RQ1 and RQ2: PIF across the program with influence of individual characteristics

Standard multiple regression was used to analyse the influence of year of study and each other individual characteristics with the results for each construct and the overall rating shown in Table 6 (β value, for B and SE; see supplementary file). The results were significant for some cohorts for particular constructs. Not currently working (compared with working) and low SES (compare with medium or high SES) were positively associated with self-esteem. Cohen's f^2 analysis indicated a medium effect size ($f^2 = 0.27$). First year, second year, third year were negatively associated with PPR, (compared to fourth year), also a medium effect size ($f^2 = 0.27$). Age and study load (part-time rather than full-time) were positively associated with ERB whereas third year was negatively associated (compared to fourth year), again a medium effect size ($f^2 = 0.22$).

Table 6: Influence of individual characteristics on perceived PIF

Characteristics	**Total Rating β**	**SPA β**	**IC β**	**RC β**	**SE β**	**PPR β**	**CEA β**	**ERB β**
First year	-0.24	-0.02	-0.28*	-0.05	-0.07	-0.45**	-0.20	-0.13
Second year	-0.20	-0.28*	-0.16	-0.01	-0.07	-0.34**	-0.13	-0.21
Third year	-0.02	0.16	0.07	0.06	0.07	-0.27*	-0.02	-0.32**
Not currently working	0.04	0.15	0.03	0.07	0.24*	0.02	-0.08	-0.08
Age	0.00	0.03	-0.14	-0.05	-0.03	0.06	-0.01	0.27*
Low SES	0.19	0.09	0.06	0.11	0.22*	0.14	0.16	0.01
Medium SES	0.07	0.06	0.12	0.04	0.21	-0.04	-0.02	0.06
FiF	-0.18	-0.05	-0.02	-0.05	-0.11	-0.17	-0.20	-0.09
WAM	0.03	-0.11	-0.07	0.13	0.03	0.01	0.04	-0.03
Study load	0.13	0.05	0.09	-0.05	0.21	0.01	0.07	0.23*
F-value	1.18	1.77	1.16	0.39	1.95*	1.99*	0.78	2.04*
R^2	0.14	0.19	0.14	0.05	0.21	0.21	0.1	0.22
Adjusted R^2	0.02	0.08	0.02	-0.08	0.1	0.11	-0.03	0.11

Note: $^{**}p \leq 0.01$; $^{*}p \leq 0.05$.

Discussion

Few studies have explored the formation of professional identity among SP students. This study used a valid and reliable measure to understand how professional identity forms and explore the influence of individual characteristics on this rating. The response rate by each cohort indicates students increasingly recognising the importance of employability skills as they move closer to graduation.

RQ1 PIF across the program

This study found SP students rated their professional identity higher as they moved further through their program of study, influenced by the program rather than age. Other studies in different disciplines have reported different results (these were using different self-rating tools). One study

including a range of health students' disciplines (not SP) found students rated their professional identity higher in first year, then lower across the program (Coster et al., 2008). This same pattern was found with occupational therapy students, with first years significantly higher than final year students on a professional attitude scale (Derakhshanrad et al., 2022). In the case of art therapists, self-awareness and professional identity increased significantly over that program (Elkis-Abuhoff et al., 2010). None of the survey instruments in these studies, however, investigated a wide range of constructs within PIF so, in the future, using a more in-depth, nuanced assessment of professional identity is required understand this discipline differences. In addition, since programs of study can make a positive or negative difference to the PIF of the student (Ogawara et al., 2009), the results from this study indicate more emphasis on activities that positively enhance all aspects of PIF is required (e.g., Lewis et al., 2023).

Another finding of this study, focusing on the individual constructs of PIF was SP students perceive themselves to be more self-aware, more committed to their future career, and more aware of the program's relevance to this career as they progress through the program. For SP students, it would seem that self-awareness, professional identity and understanding the relevance of the course are linked, so activities to develop students' self-awareness alongside activities for PIF and being explicit how each unit of a program is relevant to their future career is worthwhile. Similarly, another study across a range of disciplines using the same full survey instrument (Bennett, Bawa, & Ananthram, 2021), found high scores among health students for SPA, IC (especially for female students) and PPR. SP is a female dominated profession. Previous studies, using other instruments, report increasing self-awareness and professional identity across a program in medicine (Holden et al., 2012) and nursing (Karanikola et al., 2018; Ralph, 2015). Further studies link self-reflection with developing professional identity (Trede & McEwen, 2012; Wald, 2015; Wald & Ruddy, 2021). In contrast to this finding, first-year business students rated themselves higher than students in later years of study on the same three constructs of PPR, SPA, IC (Bennett, Ananthram, et al., 2022) – the opposite of SP students. Further, amongst science, technology, engineering, mathematics and medicine/health (STEMM) students, differences were found for individual constructs for different disciplines and when compared to non-STEMM students. These contrasting ratings of individual constructs for different disciplines also suggests results for PIF are occupation specific and may be influenced by the structure of the program, graduate trajectories (including differences between accredited and generalist degrees), and practicum experiences. Activities which enable students to positively see themselves in their future role (for example, see Ronfeldt and Grossman, 2008) would support PIF.

In this study, SP students did not follow the same pattern for other constructs. RC changed little across the program, implying commencing SP students were sure they wished to be SPs, and did not reconsider their commitment to SP throughout the program. This same strong commitment to their career was also found among health students in another study (Bennett, Knight, Bawa, & Dockery, 2021) but this was in contrast to business students' rating of RC, which increased significantly from first to second year and again from second to third year (Bennett, Ananthram, et al., 2022). The explanation for these contrasting findings might again lie in relative career clarity: that is, SP students have a well-defined health professional career with professional standards which become more obvious as they progress through the program, whereas business students have less well-defined career pathways and typically less practicum experiences, leading to less confidence about their professional identity. Also, health professions routinely include self-reflection throughout their programs, often linked to and within practicum experiences, as reflective practice is seen as a key learning strategy (Mann, 2016) and courses with less practicum (ACEN, 2023) may have less reflective activities linked to real-world experiences. This highlights the importance of embedded practicum or work integrated learning experiences with linked reflective activities across the curriculum to help facilitate the enhancement of PIF.

The rating of the construct of self-esteem (SE) in this study changed little, staying relatively low across the program for SP students, even while their self-awareness and overall professional identity ratings

increase. SE is an important consideration as SE is known to positively influence assertiveness (Keates, 2022) resilience, and job satisfaction (Özdemir & Adıgüzel, 2021), and to reduce burnout (Manomenidis et al., 2017), which is particularly common in healthcare professions since COVID (Edú-Valsania et al., 2022). Assertiveness is essential for health professionals in a hierarchical health service (Omura et al., 2017), where doctors and nurses have been found to have higher levels of dominance than other health professions and therefore more likely to be assertive (Louwen et al., 2023). It is, therefore, important to understand why self-esteem does not increase in SP students. This finding is surprising as it is in contrast to nursing, where researchers found increased professional identity or values increased self-esteem (Iacobucci et al., 2013; Manomenidis et al., 2017), with one nursing study finding personal and professional self-concepts and self-worth interlinked, influencing each other (Karanikola et al., 2018). A further meta-analysis of identity status studies across the lifespan (mostly college-aged students) also found a positive correlation between committed identity and self-esteem for most but not all measures (Ryeng et al., 2013). One explanation for SPs low SE rating may be linked to their high levels of perfectionism (Beck et al., 2017). Karanikola and colleagues (2018) found nurses who had internal criteria to evaluate their clinical performance had higher self-esteem than nurses relying on external evaluation of their performance. Therefore, an alternative explanation for low SE in SP students may be that with increasing focus on practicum assessment in the final years of the program, their focus remains on an external rather than an internal understanding of their skills and worth. Also, as the program progresses to include more difficult content in later years, SP students may not get the sense of achievement which might increase their SE. The SE finding indicates the importance of activities to foster SE in SP students so they will be assertive for their clients (and themselves) in their multi-disciplinary workplace teams. Face to face interactive learning opportunities with discussion and role plays have been found to foster assertive communication skills (Omura et al., 2017) as does modelling, mentoring and feedback on placement (Keates, 2022) so these activities should also be incorporated into the curriculum.

This final construct of interest in this study, ERB, only increased among year four SP students, which is surprising given that ethical aspects of the profession feature strongly in healthcare programs. In contrast, other researchers have found a link between ethics and professional values among senior nursing students (Iacobucci et al., 2013). Another recent study exploring ethical dilemmas among new graduate and experienced SPs found that PI influenced and was influenced by these dilemmas (Kenny et al., 2009) and there was a similar finding among medical students (Wald & Ruddy, 2021). Both studies recommended training in ethics, with in-depth discussion of issues and potential strategies (Iacobucci et al., 2013; Kenny et al., 2009), and these also appear to be worthy considerations for SP programs.

RQ2 Influence of individual characteristics

The individual characteristics analysed in this study were age, work status, SES, NESB, FiF, WAM, and study load. None of these characteristics influenced the overall rating, but there were some differences for individual constructs based on age, study load, work status and SES, and these are discussed in turn.

In this study, age positively influenced the ERB construct, so perhaps older SP students with more life experience are more comfortable with their values and how to behave ethically in the workplace and community. Part-time students also rated themselves higher for this construct than full-time students, possibly because they were more likely to be balancing part-time study with other work or family commitments, meaning mature age students were more likely to be part-time and so possibly influenced this result. Although there is an increasing focus on ethics in health professional education (Andersson et al., 2022), the authors could find no study that examined the influence of individual characteristics (such as age) on ethical reasoning. This could be an area for future research.

SP students who were not working rated their SE higher than those who were working in this study. This finding could be explained by the Dunning Kruger effect (Dunning, 2011), a cognitive bias where

a lack of knowledge of task requirements causes a person to overestimate their abilities. In this case students who are not working are not aware of the challenges of the workplace whereas those who are working realise how much they must learn and so rate their SE lower. Another study examining the results of over 2,000 higher education students using the same measure found a nuanced understanding of work status was required (Bennett et al., 2023). If students had never worked, there were differences in whether they were looking for work, and if they were volunteering in a related field. There were also differences according to whether the choice to work was voluntary or a financial necessity, and the extent to which paid work negatively impacted the time available to study (Bennett et al., 2023). For disadvantaged students across higher education (especially for those with a disability, Aboriginal students and students from low SES), paid work in the final year greatly increases overall employability (Pitman et al., 2019). The results of Pitman's study were so striking that the authors recommended students from disadvantaged groups be supported to study part-time in their final year, so that they could combine work and study (Pitman et al., 2019). An implication of this finding is to discuss with students the benefits of working while studying, and to particularly encourage students from disadvantaged groups to work.

The final finding of this study for individual characteristics was that students from lower SES rated themselves higher on SE than those from higher SES. This finding is in contrast to the meta-analysis by Twenge and Campbell (2002) of studies exploring the relationship between self-esteem and SES. They found that people with higher SES had higher self-esteem, from young adulthood throughout working age (Twenge & Campbell, 2002). Devlin (2013) reported that students from low SES feel uncomfortable at university and have difficulties mastering the discourses required for success. It is interesting that SP students from lower SES in this study seem to have higher SE; however, as all SP students in this study were giving low ratings for SE, this result may be an anomaly.

Implications for higher education programs

As PIF is influenced by the program of study, it is important to embed a range of activities which enhance students' PIF as well as their self-awareness across programs of study. Reflective activities, linked to embedded practicum or work integrated learning experiences and continued explicit linking of unit contents with their future career is also recommended. These activities may be particularly important for programs leading to less well-defined careers, where it is harder for a student to see themselves in their future role. A focus on developing self-esteem and assertiveness seems to be particularly important for SP students. Similarly, students need opportunities to explore real world ethical dilemmas related to SP, to enhance ethical and responsible behaviour. Aspects of PIF are influenced by individual characteristics in a range of complex ways, meaning that students' PIF will be distinct. Despite this, encouraging students to understand the benefits of working and to consider the links between their paid and unpaid work, life commitments and their future career in terms of strengths and experience is likely to positively influence PIF across the student cohort.

Limitations and recommendations for further research

This study was undertaken in one health discipline at a single university, and application to other programs needs to be treated with caution. Other researchers are encouraged to replicate the study. Students self-selected to complete the tool and there were insufficient numbers in some subgroups to be able to analyse the influence of individual characteristic (e.g., disability, international students, Aboriginal students). Unfortunately, there were also too few males in this study to consider gender, although gender differences found in other studies (Bennett, Ananthram, et al., 2022; Bennett, Bawa, et al., 2022; Bennett, Knight, Koshy, & Li, 2021) suggest the value in gathering an increased sample to explore gender differences. There were also too few students to look at regionality, although other studies have found regionality to have an influence (Bennett, Knight, Koshy, & Li, 2021).

Although the multiple linear regression analyses stratified the response sample into small groups, impacting sample size and potentially the accuracy of the results, the t-test on larger samples did show similar patterns, adding strength to the multiple linear regression findings.

There are established difficulties interpreting some of the characteristics included in university enrolment data, and these are mentioned here. For example, SES is based on postcode during study which may not align to where the student originally grew up. Similarly, first in family status is based on parents' qualifications, whereas other members of the wider family or older siblings may have attended university, meaning the student is not the first in the family to attend. Also of note, students selecting work status as full time, part time, casual or not working does not give an indication of how many hours are worked or the relevance of this work to the student's future career. For example, being an SP assistant may have a stronger influence on professional identity development than unrelated work such as cleaning or in retail.

Finally, the intersectionality of different disadvantages was beyond the scope of this study and the impact of multiple disadvantaging characteristics may have a cumulative impact on PIF. This warrants further study, as students with multiple disadvantages may benefit from tailored support. Future research across different health programs would add to the understanding of how individual programs develop PIF. Finally, larger student populations may enable more nuanced examination of the influence of individual characteristics such as disability or Aboriginality on PIF.

Conclusion

This is one of the first studies to examine PIF among SP students across a program of study and employed a comprehensive measure with strong validity and reliability. Results indicate that PIF is influenced by the program of study but not in the same way across all constructs. PIF is complex and it is variously influenced by individual characteristics such as age, work status and socio-economic status. Students' PIF would benefit from in-depth discussions about the nature of SP careers and professional ethics, and from support in the development of self-esteem.

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Declaration of interest

The authors report that there are no competing interests to declare.

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