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Protean career processes in young adults: Relationships with perceived future employability, educational performance, and commitment

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Abstract

Protean career processes of vocational identity awareness, career adaptability, and career agency have been hypothesized to mediate the relationships between protean career orientation and career-related outcomes. To date, the role of these process mechanisms has not been assessed directly in young adults, and little attention has been paid to educational outcomes, which are important career-related goals for young people on the way to their desired career. To address this gap, we tested this indirect-effects model in a sample of young adult undergraduates ($N = 396$; $M_{age} = 20.19$, $SD = 2.99$; 72.2% women) and included career-related goals (perceived future employability, educational performance, and commitment) as outcomes. Identity awareness and career adaptability partially explained the relationship between protean career orientation and perceived future employability and completely explained the relationships with educational performance and commitment. Contrary to protean career theory, there were no significant indirect paths via career agency to any of the outcomes.

Keywords Protean career processes · Vocational identity · Career adaptability · Career agency · Future employability · Educational performance · University commitment

Résumé

Processus de carrière protéenne chez les jeunes adultes: Relation avec l'employabilité future l'employabilité future perçue, la performance scolaire et l'engagement. Les processus de carrière protéenne de la conscience de l'identité vocationnelle, de l'adaptabilité de la carrière et de l'agentivité de carrière ont été présu-

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més médiateurs des relations entre l'orientation de carrière protéenne et les résultats liés à la carrière. Jusqu'à présent, le rôle de ces mécanismes de fonctionnement n'a pas été évalué directement chez les jeunes adultes, et peu d'attention a été accordée aux résultats scolaires, qui sont des objectifs importants liés à la carrière pour les jeunes sur la voie de leur carrière souhaitée. Pour combler cette lacune, nous avons testé ce modèle à effets indirects sur un échantillon de jeunes adultes étudiantes de premier cycle ($N = 396$; M âge = 20,19, $SD = 2,99$; 72,2% de femmes) et avons inclus des objectifs liés à la carrière (employabilité future perçue, performance scolaire et engagement) comme résultats. La conscience de l'identité et l'adaptabilité de la carrière expliquent partiellement la relation entre la carrière protéenne et l'employabilité future perçue et expliquent complètement les relations avec la performance scolaire et l'engagement. Contrairement à la théorie de la carrière protéenne, il n'y avait pas de liens indirects significatifs entre l'agentivité de carrière et les résultats.

Resumen

Procesos Proteicos de Carrera en Adultos Jóvenes: Relationship with la empleabilidad futura percibida, el rendimiento educativo y el compromiso.Se ha planteado la hipótesis de que los procesos proteicos de la carrera profesional, como la conciencia de la identidad profesional, la adaptabilidad profesional y la agencia profesional, median en las relaciones entre la orientación profesional proteica y los resultados relacionados con la carrera profesional. Hasta la fecha, el papel de estos mecanismos de proceso no se ha evaluado directamente en adultos jóvenes, y se ha prestado poca atención a los resultados educativos, que son importantes objetivos relacionados con la carrera para los jóvenes en el camino hacia su carrera deseada. Para subsanar esta carencia, probamos este modelo de efectos indirectos en una muestra de jóvenes adultos universitarios (N = 396; M edad = 20,19; DT = 2,99; 72,2% mujeres) e incluimos como resultados objetivos relacionados con la carrera profesional (empleabilidad futura percibida, rendimiento educativo y compromiso). La conciencia de identidad y la adaptabilidad profesional explicaron parcialmente la relación entre la orientación profesional proteica y la empleabilidad futura percibida, y explicaron completamente las relaciones con el rendimiento educativo y el compromiso. Contrariamente a la teoría de la carrera proteica, no se encontraron caminos indirectos significativos a través de la agencia de carrera hacia ninguno de los resultados.

Zusammenfassung

Proteische Laufbahnprozesse bei jungen Erwachsenen: Zusammenhang mit der wahrgenommenen zukünftigen Beschäftigungsfähigkeit, Bildungsleistung und dem Engagement. Es wurde die Hypothese aufgestellt, dass proteische Laufbahnprozesse im Sinne des beruflichen Identitätsbewusstseins, der Laufbahn-Adaptabilität und der beruflichen Handlungsfähigkeit die Beziehungen zwischen der proteischen Laufbahnorientierung und berufsbezogenen Ergebnissen mediieren. Bisher wurde die Rolle dieser Prozessmechanismen bei jungen Erwachsenen nicht direkt untersucht, und den Bildungsergebnissen, die für junge Menschen auf dem Weg zu ihrer Wunschlaufbahn wichtige berufsbezogene Ziele sind, wurde wenig Aufmerk-

samkeit geschenkt. Um diese Lücke zu schließen, haben wir dieses Modell mit indirekten Effekten an einer Stichprobe junger Studierenden (N = 396; M = 20,19, SD = 2,99; 72,2% Frauen) getestet und laufbahnbezogene Ziele (wahrgenommene zukünftige Beschäftigungsfähigkeit, Bildungsleistung und Engagement) als Ergebnisse einbezogen. Identitätsbewusstsein und Laufbahn-Adaptabilität erklärten teilweise die Beziehung zwischen der proteischen Laufbahnorientierung und der wahrgenommenen zukünftigen Beschäftigungsfähigkeit und erklärten vollständig die Beziehungen zu Bildungsleistung und Engagement. Im Gegensatz zur proteischen Laufbahntheorie gab es keine signifikanten indirekten Pfade über die berufliche Handlungsfähigkeit zu einem der Outcomes.

Introduction

Hall (1976) proposed that a protean career orientation would be required for successful career outcomes in the rapidly changing work environments of the twenty-first century; meaning that workers will need to be more adaptable, self-directed, and self-managing over the course of their careers in the face of technological developments and globalization (Hall et al., 2018). A protean career orientation can be understood as a whole-of-life lens on career development, where people set and progress their work and life goals according to their own intrinsic values (Steiner et al., 2019). As a result of this, some career researchers have suggested that promoting a protean career orientation might benefit young people, as self-direction and value-driven attitudes will facilitate their transition from adolescence to adulthood as well as be an asset in the adult labor market (Creed et al., 2011; Hall et al., 2018).

In support of these contentions, a protean career orientation has been associated with a range of positive career-related variables, such as self-regulation, proactive personality (Creed et al., 2011), internal locus of control (Liberato Borges et al., 2015), perceived employability (Baruch et al., 2019), and career adaptability (Bernardo & Salanga, 2019). However, to date, research has focused mainly on examining the predictors and outcomes of a protean career orientation in a fragmented manner without clarifying the underlying mechanisms that might explain the relationships with important career outcomes (Herrmann et al., 2015).

To facilitate a better understanding of these underlying mechanisms, Hall et al. (2018) proposed an integrative model that outlined key protean career explanatory processes that connect protean career orientation to career-related outcomes. These underlying processes or mechanisms between protean career orientation (PCO) and career outcomes have been demonstrated to operate in adult worker samples (e.g., Sultana & Malik, 2019); however, not all mechanisms have been assessed in young adult students, and they have not been tested simultaneously in this population. This is a significant gap as it is vital to understand critical explanatory processes in young adult students as this will help educational institutions and policymakers better facilitate their skills uptake and transition to the full-time workforce.

To the best of our knowledge, only one of Hall et al.'s (2018) mechanism has been tested in young adult students—career adaptability—and the results from these assessments were inconsistent. Chui et al. (2020) found that career adaptability fully

explained the relationship between PCO and career optimism, while Li et al. (2019) found no indirect relationship between PCO and career decidedness. This suggests further research is required, to test all three of Hall et al.'s mechanisms and to also test them simultaneously to determine which are the more important. In addition, study-related variables have not been assessed as outcomes of PCO, which is an important omission in young adult student samples.

To address these gaps, we tested a comprehensive indirect-effects model of the underlying mechanisms (i.e., vocational identity awareness, career adaptability, and career agency) linking PCO to young people's career-related goals of building perceived future employability, university commitment, and educational performance. See Figure 1. Understanding these mechanisms will contribute to protean career theory development by clarifying untested relationships and extending this model to young people who have not entered the full-time workforce, but who, nonetheless, have important career-related goals to achieve. The study also has policy implications and implications for practitioners who work with young people preparing for a career, thereby, benefitting the young people themselves.

Protean career orientation (PCO)

The concept of the protean career first emerged in the 1970s when organizations began downsizing, restructuring, and laying off employees to increase their flexibility to respond to more turbulent and dynamic economic conditions (Hall, 1976; Veloso et al., 2018). These organizational changes placed greater emphasis on the individual worker to be the primary agent in their career development rather than relying on organizationally-managed careers (Hall, 1996). Following these changes, much career-based research shifted from focusing on corporate-driven careers to newer career models, including the protean career, which has generated the most empirical research and support (Hall et al., 2018).

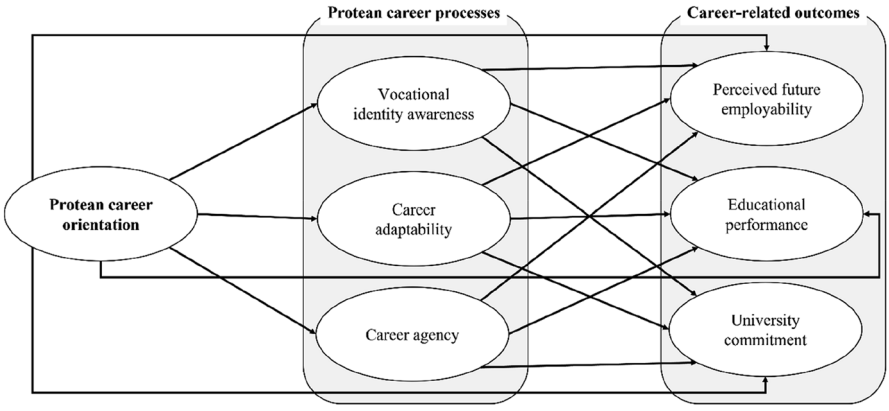

Figure 1 Protean career processes applied to young adults (Adapted from Hall et al., 2018)

PCO derived its name from the Greek god Proteus, who could change shape at will to meet environmental challenges (Hall, 2004). Holding a PCO means that individuals are more likely to set their own criteria for success (Hall, 2002), take responsibility for themselves, and abide by their own core values (i.e., being self-directed and values-driven) when shaping their career (Briscoe et al., 2006). In this quest, they pursue workplaces that align with their inner values and work on and develop their careers largely on their own (Hall, 2002). The focus on self-direction and values means that protean-oriented individuals feel successful when they meet their own subjective criteria for success rather than achieve success defined by others or society at large. Research has shown that protean careerists also succeed on objective measures, such as higher salary (Sultana & Malik, 2019), promotion (Grimlanda et al., 2012; Kaushal & Vashisht, 2021), more job offers (Cortellazzoa et al., 2020), and stronger affective organizational commitment (Alonderienė & Šimkevičiūtė, 2018; Çakmak-Otluoğlu, 2012). When considering young adult students, based on PCO theory and the accumulated evidence with adults, it is likely that PCO would be related to greater thoughtfulness about career direction, higher career-choice satisfaction, and making better career-goal progress.

Career-related outcomes of protean orientation

Career-related outcomes proposed in Hall et al.'s (2018) model include both subjective and objective career success and organizational commitment. Subjective career success refers to the person's psychological experience of success, which has been assessed as career satisfaction (Presti et al., 2018; Volmer & Spurk, 2011), self-marketability (De Vos et al., 2011), and perceived employability (De Vos & Soens, 2008). In young adults still preparing for employment, perceived *future* employability is an increasingly important career-preparatory outcome, as lifelong traditional employment is no longer guaranteed on graduation (Rodrigues et al., 2019), and perceiving that one will find and maintain employment in a desired field in the future is important for confidence and health (Hazelzet et al., 2019). Perceived future employability refers to the perceived value of "future skills, experience, networks, personal traits, labor market knowledge, and institutional reputation" at the end of formal education (Gunawan et al., 2018, p. 610).

A PCO is related to higher perceived employability in adults (De Vos & Soens, 2008), including in specific areas of banking (Lin, 2015) and the university sector (Zafar et al., 2017). In young adults, the same relationship has been found cross-sectionally and over-time for Indian MBA students (Baruch et al., 2019), supporting that a PCO might advantage young people in the critical period of transition to the labor market. Last, in a sample of adult employees who were receiving career counselling, the positive association between PCO and perceived employability was fully accounted for by the indirect effect via self-awareness (De Vos & Soens, 2008). Thus, we operationalized the first outcome of Hall et al.'s (2018) model as perceived future employability, an important precursor to finding work in young people (Gunawan et al., 2018).

The second career outcome in Hall et al.'s (2018) model is objective career success, which has been operationalized as income, promotions, and organizational level. For example, PCO is associated with higher salary in professionals (Sultana & Malik, 2019; Volmer & Spurk, 2011) and more senior managerial positions in organizational hierarchies (Grimland et al., 2012). However, while these objective indicators of career success are relevant in the adult workforce, they are not applicable to young adult students. A more relevant criterion here is educational performance, which is important, as having clear occupational goals encourages investment of time and effort in education (Presti et al., 2022), plays an important role in later career success (Thiele et al., 2018), and predicts objective success in the workplace (Sulastri et al., 2015). Higher self-reported educational performance is related to subsequent higher salary (Roth & Clarke, 1998), more success in finding a job (Sulastri et al., 2015), and better performance in entry-level training (Dye & Reck, 1989). Thus, self-reported educational performance was included as the second outcome measure.

The third of Hall et al.'s (2018) outcomes, organizational commitment, is important as it relates directly to task performance (Felfe et al., 2014). The self-directed component of PCO, in particular, is associated with higher organizational commitment (Çakmak-Otluoğlu, 2012; Enache et al., 2013). Additionally, Alonderienė and Šimkevičiūtė (2018) demonstrated that self-directed young people working in the finance industry had a stronger sense of attachment to their employing organization. Fernandez and Enache (2008) showed that working university students exhibited a stronger sense of attachment to their workplace when they reported a higher PCO, and Sinclair et al. (2005) showed that commitment was related to both task and organizational citizenship behaviors in working college students. A parallel outcome for students is university commitment, which is related to study engagement, reduced intention to drop-out, successful degree completion, and self-congruence, all important constructs for progressing young people's career goals (Felfe et al., 2014; Japutra et al., 2016; McNally & Irving, 2010). Thus, we included university commitment as the final outcome measure. Consequently, our first hypothesis when testing this model with young adults was:

Hypothesis 1: A PCO is associated positively with perceived future employability (H1a), educational performance (H1b), and university commitment (H1c).

Protean career processes in young adults

According to Hall et al. (2018), three specific protean career processes (i.e., vocational identity awareness, career adaptability, and agency) lead to successful career-related outcomes. *Vocational identity awareness* is to understand one's career-related beliefs, interests, goals, values, and abilities (Holland et al., 1980; Steiner et al., 2019). It is particularly relevant for young adults who are in the developmental stage for establishing a vocational identity (Porfeli et al., 2011), and is necessary for successfully choosing an occupation that fits aptitudes and interests (Meijers et al., 2013; Mortimer et al., 2002). Students with a stronger vocational identity are more

committed to their studies (Wong & Kaur, 2018) and have fewer academic difficulties (Aleni Sestito et al., 2015).

A PCO has been shown to precede changes in vocational identity in university students (Hirschi et al., 2017), potentially as those more self-directed are more likely to attend to identity issues to build their careers in accordance with internal values (Briscoe et al., 2012). There is evidence also that young adults with a clearer career identity report higher perceived employability (Praskova et al., 2015) and better educational performance (Klimstra et al., 2012; Pop et al., 2016), both indicators of career success. Although no studies were identified that tested the indirect paths from PCO via identity awareness to university commitment, lower levels of identity awareness were related to an intention for working adults to leave their organization (Haibo et al., 2018). In support of these relationships, Hirschi et al. (2017) showed that adopting a PCO enabled university students to strengthen their vocational identity by prompting their career decisions at an appropriate time (see also Mortimer et al., 2002). Thus, we hypothesized that:

Hypothesis 2: A PCO is related positively to vocational identity awareness.

Hypothesis 3: The relationships between PCO and perceived employability (H3a), educational performance (H3b), and university commitment (H3c) are explained by indirect effects via vocational identity awareness.

Hall et al.'s (2018) second underlying process is *career adaptability*, which refers to the self-regulation strategies that help people prepare for their future, enervate career behaviors, explore vocational opportunities, and overcome obstacles (Savickas, 1997). A PCO is associated with greater career-adaptability (Bernardo & Salanga, 2019), which, in turn, is associated with more successful vocational transitions in adolescents (Monteiro & Almeida, 2015), and a PCO has been reported to have a positive relationship with career adaptability in young adults (Chan et al., 2015; Chui et al., 2020; Li et al., 2019). Empirical evidence suggests that this protean process would lead to young people being more successful in meeting their career-related goals because they have developed resources to deal with continuous change and contemporary challenges (Stauffer et al., 2019).

In a recent meta-analysis of the relationships between career adaptability and various adaptation outcomes, Rudolph et al. (2017) found that career adaptability was linked positively to perceived employability and affective organizational commitment. Further, Rottinghaus et al. (2005) demonstrated that adaptable university students performed better on academic tasks, which is important as academic performance is related to later career success, such as employment and higher initial salary after graduation (Sulastri et al., 2015; Vermeulen & Schmidt, 2008). Thus, we hypothesized that:

Hypothesis 4: PCO is related positively to career adaptability.

Hypothesis 5: The relationships between PCO and perceived employability (H5a), educational performance (H5b), and university commitment (H5c) are explained by the indirect effects via career adaptability.

The final protean career process is *career agency*, which is the capacity to translate a PCO into successful career outcomes (Hall et al., 2018), such as career engagement (De Vos & Soens, 2008). Vocational identity awareness and career adaptability were considered original protean meta-competencies that enabled protean-oriented individuals to manage their career successfully (Briscoe et al., 2006; Hall, 2002). To these, Hall et al. (2018) added career agency, as agency is critical for facilitating an individual's performance. It has been shown, for example, that those with a stronger PCO are more likely to actively manage their career in accordance with their own values, utilizing specific career planning strategies and career development activities (Hirschi et al., 2017; Presti et al., 2018).

In a sample of both students and employees, Herrmann et al. (2015) found that PCO was an important predictor, beyond proactive disposition, of proactive career behaviors, such as career engagement. Creed et al. (2011) found positive associations in young adults between PCO and career engagement activities, such as career planning and exploration. Further, De Vos et al. (2009) showed that career engagement activities (e.g., career planning and networking) predicted subjective and objective career success in graduates (i.e., career satisfaction and salary). Although these studies imply that career agency can be a salient protean career process for positive outcomes in young adults, they did not examine career outcomes related to career agency nor how PCO might relate to career outcomes via career agency. As a result, we hypothesized that:

Hypothesis 6: PCO is related positively to career agency.

Hypothesis 7: The relationships between PCO and perceived employability (H7a), educational performance (H7b), and university commitment (H7c) are explained by the indirect effects via career agency.

To summarize, young adult students with higher PCO are more likely to feel confident about their future employment and academic performance and commit to their educational institution by clarifying their vocational identity, utilizing personal resources of being adaptable, and exerting agency when pursuing their career goals. Thus, it can be argued that Hall et al.'s (2018) model is applicable to young student adults in this early phase of their career development. However, we identified no existing studies that simultaneously tested the indirect effects of the crucial protean processes between PCO and the career-related outcomes in young adult students. This is important to investigate. Young people invest time and resources to achieve a better future, which is not always easy in volatile and uncertain career environments (Bennett & Lemoine, 2014). Identifying how policymakers and practitioners can more effectively assist students will help them progress their career development, aid their transition from education to work, and contribute to them attaining successful and satisfying careers.

Method

Procedure

Young adult students were recruited from one large multi-campus, Australian university from March to May 2020. The authors' university ethics committee provided ethical clearance. Participants were recruited by advertising the link to an online questionnaire on websites for foundation year, health courses and in a university-wide email. Students received course credit in return for fully completing the anonymous and voluntary questionnaire, and could enter a prize draw to win one of two AU$50 shopping vouchers.

Participants

Four hundred and four students responded to the survey. Of these, 8 were excluded as they did not complete the questionnaire or exhibited patterned responding, leaving 396 cases (72.2% women; M_{Age} = 20.19, SD = 2.99, range 17–28 years). Most (90.7%) were domestic students, with the remainder being international students studying in Australia. Self-reported average academic achievement for the final year of high school was 3.97 (where 1 = *very limited achievement* to 5 = *very high achievement*). Mean subjective social status was 6.16 ("Think of these numbers as a ladder representing where people stand in society; 1 = *at the bottom* to 10 = *at the top*; Adler et al., 2000). Students were enrolled in various disciplines (e.g., health, psychology, law, business, criminology) and worked in a range of jobs (e.g., hospitality, tourism, education, administration, healthcare; range = 3 to 40 + hours per week). There was a spread of first to fourth year students, reporting having completed an average 35 credit points (about 4 courses; range 0 to 90) before their current course.

Measures

There were 56 scale items, with each having a 6-point Likert-like response (1 = *strongly disagree* to 6 = *strongly agree*), unless otherwise noted. Higher summed scores reflected higher levels of a construct.

Protean career orientation

We used the 14-item Protean Career Orientation Scale (Briscoe et al., 2006) after amending some items so they were suitable for students. The amended items were "When development opportunities have not been *offered to me* [*offered by my company*], I have sought them out on my own", "In the past, I have relied more on myself than others to *make decisions about my career* [*find a new job when necessary*], "I navigate my own career based on my personal priorities, as opposed to *priorities of those around me* [*my employer's priorities*], "I will follow my own conscience

if, *in the future, the people I work for* [*my company*] ask me to do something that goes against my values", "What I think is right for my career is more important to me than what *others around me* [*my company*] think", and "In the past, I have sided with my own values when *others* [*the company*] have asked me to do something I don't agree with" (all changes were read and approved by career experts to support content validity). A Cronbach alpha of 0.77 was reported with students (Herrmann et al., 2015), and validity supported by showing positive associations with proactivity and career authenticity (Briscoe et al., 2006). In our sample, alpha was 0.84 and, supporting validity, the scale related to other study variables as expected (e.g., related positively to career identity awareness and adaptability; see Table 1).

Vocational identity awareness

A short 6-item Vocational Identity Measure devised by Gupta et al. (2014) was used to assess awareness of career goals, interests, and abilities. A sample item is, "It is clear to me what I want to do for a living after I graduate." Previously reported α was 0.96, with validity supported by finding positive associations with career exploration, commitment, and self-efficacy (Gupta et al., 2014). Alpha was 0.94.

Career adaptability

The shortened, 12-item Career Adapt-Abilities Scale (Maggiori et al., 2015) assesses the four adaptability domains of concern, curiosity, control, and confidence. Sample items are, "Thinking about what my future will be like" (concern), "Looking for opportunities to grow as a person" (curiosity), "Making decisions by myself" (control), and "Taking care to do things well" (confidence; 1 = *not a strength* to 5 = *greatest strength*). An α of 0.90 has been reported, and validity supported by demonstrating positive correlations with job satisfaction and occupational self-efficacy, and negative correlations with work-related stress (Maggiori et al., 2015). In our sample, α was 0.89.

Career agency

The 9-item Career Engagement Scale (Hirschi et al., 2013) evaluates the extent to which students are involved in career planning, exploration, networking, positioning behavior, and voluntary training. A sample item is, "To what extent have you actively sought to design your professional future in the past 6 months?" An α of 0.87 was reported in a sample of students, and validity supported by finding positive associations with vocational identity clarity and self-efficacy (Hirschi et al., 2013). In our study, α was 0.85.

Future employability

Six items from the 24-item Perceived Future Employability Scale (Gunawan et al., 2018) was used to measure student perceptions of their employment prospects after they graduate. The items chosen were the highest loading item on each of the six

Table 1 Summary data, bivariate correlations (below diagonal), and latent variable correlations (above diagonal)

Variables	*M*	*Range*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Protean career orientation	67.68	14–84	7.44	–	0.45***	0.57***	0.36***	0.47***	0.29***	0.23***	–	–	–	–	–
2. Career identity awareness	27.64	6–36	5.99	0.39***	–	0.36***	0.51***	0.48***	0.34***	0.35***	–	–	–	–	–
3. Career adaptability	44.02	12–60	7.35	0.48***	0.34***	–	0.50***	0.45***	0.39***	0.33***	–	–	–	–	–
4. Career agency	37.06	9–54	7.43	0.32***	0.42***	0.45***	–	0.43***	0.33***	0.29***	–	–	–	–	–
5. Future employability	28.02	6–36	4.48	0.40***	0.39***	0.38***	0.35***	–	0.40***	0.40***	–	–	–	–	–
6. Educational performance	23.65	5–30	3.76	0.27***	0.29***	0.34***	0.29***	0.33***	–	0.31***	–	–	–	–	–
7. University commitment	14.94	4–20	3.48	0.23***	0.29***	0.31***	0.23***	0.36***	0.28***	–	–	–	–	–	–
8. Age	20.19	17–28	0.46	0.06	0.05	0.10*	0.17***	−0.06	0.10	−0.08	–	–	–	–	–
9. Sex [1]	–	–	–	−0.01	0.08	0.10*	0.05	0.08	0.01	0.11*	−0.07	–	–	–	–
10. Hours worked per week	16.28	3–65	9.80	0.02	0.07	0.07	0.06	0.07	0.07	0.04	0.26***	0.03	–	–	–
11. High school achievement	3.97	1–5	0.71	0.06	0.07	0.03	0.10	0.02	0.17***	0.08	−0.15**	0.11*	−0.07	–	–
12. Subjective social status	6.16	1–10	1.70	−0.08	−0.03	−0.03	0.09	−0.01	0.01	0.02	−0.05	0.02	−0.06	0.12*	–

$N = 396$

*$p < .05$, ** $p < .01$, ***$p < .001$. [1] Male = 0, Female = 1

original scale components (i.e., perceived future skills, accumulated experiences, personal characteristics, networks, labor market knowledge, and reputation of educational institution attended). A sample item was, "I will have gained the knowledge required to get the job I want." An alpha of 0.95 was reported by the developers, who, when supporting validity, found expected relationships with career ambition and university commitment. Alpha for the six items was 0.83 and, in support of validity, this shortened index related to other study variables as expected (e.g., positively related to educational performance; see Table 1).

Educational performance

We used the 5-item Perceived Academic Performance Scale (Verner-Filion & Vallerand, 2016), which asks students to rate their own educational performance. A sample item is, "I fulfill all responsibilities specified (e.g., study, homework, readings, papers) in the course outline." Previous α was good (α = 0.87), and for validity, the scale was positively associated with positive affect and striving for perfection (Verner-Filion & Vallerand, 2016). In our sample, α was 0.88.

University commitment

The 4-item Workplace Commitment Scale (Pejtersen et al., 2010) was adapted for the university context (e.g., "Do you enjoy telling others about your *place of work* [replaced with *university*]?"; 5-point scale ranging from 1 = *not at all* to 5 = *very much*). Previously reported α was 0.76, and validity was supported by finding positive correlations with organizational resources, such as trust and justice (Christensen et al., 2012). In our sample, α was 0.79 for the adapted scale.

Results

We used SEM (AMOS V26) to test if PCO was related to the career-related outcomes (i.e., perceived future employability, educational performance, and university commitment) via the protean career process variables (i.e., vocational identity awareness, career adaptability, and career agency). We utilized item parcels to reduce the number of parameters to be estimated as these allow researchers to meet recommended participant to parameters estimated ratio of 5:1 to 10:1 (Bentler & Chou, 1987). Parcels also are more reliable than individual items, distributions are more closely normal, response intervals are more even, idiosyncratic items are less influential, parcels are more likely linearly related with one another and with latent variables, and model solutions are more likely to be valid (Lee & Whittaker, 2021). Three parcels were constructed to represent the latent variables for each of protean career orientation, career adaptability, and career agency, and two parcels each for vocational identity, perceived future employability, educational performance, and university commitment (Landis et al., 2000).

We first tested a measurement model to ensure all latent variables were represented by their parcels, and then evaluated the relationships between PCO, the

career-related processes, and outcomes. As the correlations between the demographic and study variables were all trivial (range 0.10–0.17; see Table 1), no demographics were included as a control. To assess the indirect effects, we tested a direct effects model (paths from predictors to outcomes) and a direct plus indirect effects model (direct effects model plus indirect paths). We used AMOS bootstrapping (5000 samples) to generate 95% confidence intervals (CIs) and used these to determine if indirect effects were present. An indirect effect exists when the CI for a path does not include zero (Shrout & Bolger, 2002). All models were evaluated using fit statistics and cutoffs recommended by Hair et al. (2010). These were χ^2 (with $N > 250$ and > 12 observed variables, a significant χ^2 expected, although we note that when N is large, χ^2 is more likely to be significant), normed χ^2 (χ^2/df; < 3.0, although recommendations range from < 2 to < 5, with others recommending < 3.5 when $N > 300$; Yaşlioğlu & Yaşlioğlu, 2020), Comparative Fit Index (CFI; > 0.92), Tucker-Lewis Index (TLI; > 0.92) and Root Mean Squared Error of Approximation (RMSEA; < 0.07).

The fit for the measurement model was good: $\chi^2(98) = 177.51$, $p < .001$, $\chi^2/df = 1.81$, CFI = 0.98, TLI = 0.97, and RMSEA = 0.05. The standardized regression weights ranged from 0.77 to 0.95 (all $p < .001$), and the correlations among the latent variables mirrored those for the scale totals (see Table 1). Protean career orientation was related significantly to each outcome: future employability ($r = .47$, $p < .001$), educational performance ($r = .29$, $p < .001$), and university commitment ($r = .23$, $p < .001$; H1). There were significant correlations between protean career orientation and vocational identity awareness ($r = .45$, $p < .001$; H2), career adaptability ($r = .57$, $p < .001$; H4), and career agency ($r = .36$, $p < .001$; H6). All process variables also were associated with the outcomes: vocational identity, rs = .48, .34, .35; career adaptability, rs = .45, .39, .33; and career agency, rs = .43, .33, .29 (all ps < .001).

The structural model showed good fit; $\chi^2(101) = 187.18$, $p < .001$, $\chi^2/df = 1.85$, CFI = 0.98, TLI = 0.97, RMSEA = 0.05, and a better fit than the measurement model ($\chi^2_{\text{Diff}} = 9.67$, $df = 3$, $p < .001$). There were positive paths from protean career orientation to the process variables of vocational identity awareness ($\beta = 0.45$, $p < .001$), career adaptability ($\beta = 0.57$, $p < .001$), and career agency ($\beta = 0.36$, $p < .001$), and from these to all outcomes: vocational identity awareness to future employability ($\beta = .32$, $p < .001$), educational performance ($\beta = 0.19$, $p < .001$), and university commitment ($\beta = 0.24$, $p < .001$); career adaptability to future employability ($\beta = 0.28$, $p < .001$), educational performance ($\beta = 0.27$, $p < .001$), and university commitment ($\beta = 0.21$, $p < .001$); and career agency to future employability ($\beta = 0.13$, $p < .05$), but not educational performance ($\beta = 0.10$, $p = .13$) and university commitment ($\beta = 0.07$, $p = .36$). Thus, a stronger protean career orientation was related to higher scores on all process variables, and these were associated with higher perceived future employability, educational performance, and university commitment. These paths were added to Figure 2.

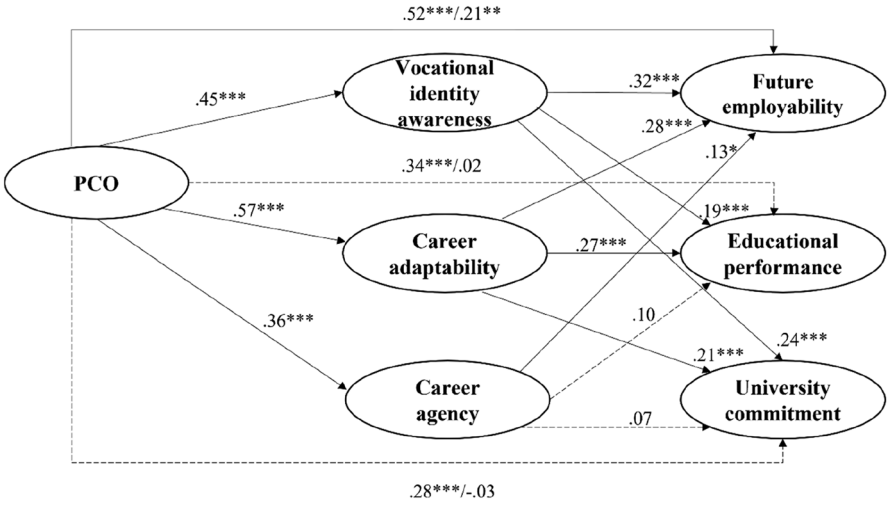

Figure 2 Key mechanisms in protean career processes for young adults. *Note* PCO = protean career orientation. Standardized regression weights are reported. Solid lines are significant paths; dashed lines are non-significant paths. Italicized statistics following the slash "/" are direct path standardized regression weights when indirect paths are included in the model. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Indirect effects analyses

The direct effects model had a good fit, $\chi^2(107) = 269.43$, $p < .001$, $\chi^2/df = 2.52$, CFI = 0.96, TLI = 0.95, RMSEA = 0.06. Paths were significant from protean career orientation to future employability (β = 0.52, $p < .001$), educational performance (β = 0.34, $p < .001$), and university commitment (β = 0.28, $p < .001$; see Figure 2). The direct and indirect effects model also fitted well, $\chi^2(98) = 177.51$, $p < .001$, $\chi^2/df = 1.81$, CFI = 0.98, TLI = 0.97, RMSEA = 0.05, and was a better fit than both the structural model ($\chi^2_{\text{Diff}} = 9.67$, $df = 3$, $p < .001$) and the direct effects only model ($\chi^2_{\text{Diff}} = 91.92$, $df = 9$, $p < .001$). With the indirect paths added, the direct path from protean career orientation to future employability remained significant (β = 0.21, $p = .007$). There were significant indirect paths from protean career orientation to future employability via vocational identity awareness (CIs_{95}: 0.05, 0.15; standardized total effect = 0.32, indirect effect = 0.11) and career adaptability (CIs_{95}: 0.03, 0.14; total = 0.31, indirect = 0.10), but not via career agency (CIs_{95}: −0.01, 0.10; total = 0.26, indirect = 0.05); supporting H3a and H5a, but not H7a.

The direct path from protean career orientation to educational performance was not significant (β = 0.02, $p = .79$) once the indirect paths were included. However, there were significant indirect paths via vocational identity (CIs_{95}: 0.02, 0.09; total = 0.10, indirect = 0.08) and career adaptability (CIs_{95}: 0.05, 0.13; total = 0.17, indirect = 0.15), but not via career agency (CIs_{95}: −0.01, 0.05; total = 0.06, indirect = 0.04); supporting H3b and H5b, but not H7b.

Last, the direct path from protean career orientation to university commitment also was not significant (β = −0.03, $p = .65$), and there were indirect paths via vocational identity awareness (CIs_{95}: 0.03, 0.10; total = 0.08, indirect = 0.11) and career

adaptability (CIs_{95}: 0.03, 0.12; total = 0.10, indirect = 0.13), but not via career agency (CIs_{95}: −0.01, 0.04; total = −0.01, indirect = 0.02); supporting H3c and H5c, but not H7c. The variance explained was 19.9% in vocational identity, 32.0% in career adaptability, 12.8% in career agency, 35.9% in future employability, 20.4% in educational performance, and 17.3% in university commitment.

Discussion

The purpose of the study was to test the key mechanisms proposed by protean career theory (Hall et al., 2018) using a sample of young adult students prior to them entering the workforce. To date, no simultaneous tests of the indirect effects of the three key protean career processes (i.e., vocational identity awareness, career adaptability, and career agency) proposed by Hall et al. (2018) have been conducted, and no study has tested the model in a sample of young adult students. There was partial support for the indirect paths between PCO and the career-related outcomes (future employability, educational performance, and university commitment) via the protean career processes. Identity awareness and career adaptability completely explained the relationships between PCO and educational performance and university commitment, and partially explained the PCO to employability relationship, providing support for the underlying mechanisms of identity awareness and career adaptability.

First, our findings demonstrated direct relationships between PCO and the three career-related outcomes of future employability, educational performance, and university commitment. These relationships have been found in adult workers for perceived employability (De Vos & Soens, 2008), career success (Sultana & Malik, 2019), and organizational commitment (Alonderienė & Šimkevičiūtė, 2018; Çakmak-Otluoğlu, 2012), and we now have confirmed them for young student adults. These results indicate that holding a stronger PCO could benefit young adults preparing for the full-time workforce as this orientation is associated with more optimistic future expectations regarding education and career, and more commitment to their training institution. Positive appraisals of the future are important as these stimulate planning as well as fostering hopes for the future (Creed & Klisch, 2005), while university commitment represents current satisfaction, involvement, and reduced intention to quit study (Womack et al., 2018).

These results suggest that encouraging young adults to develop more protean-like values might contribute to their current wellbeing and progress as well as adding long-term benefits. University and training institutions might benefit also from students having stronger protean values (e.g., having more satisfied and committed students), as might society overall, with fewer students dropping out. Protean career interventions could be run through career and employment services or integrated into educational programs. Unite (2014) developed a career intervention to enhance such protean career processes and demonstrated that university students who completed the training sessions increased career value awareness, career adaptability, and career planning compared to a contrast group. Protean interventions would be well suited for young adults as they involve value exploration and the development

of self-directed skills and strategies, competencies that are likely to benefit young people in other life areas apart from careers.

As well as PCO being related to perceived future employability, educational performance, and university commitment, it was related also to more vocational identity awareness, career adaptability, and career agency. Vocational identity awareness and career adaptability have been referred to as career meta-competencies that enable individuals to pursue protean career paths (Hall, 2004). PCO, which combines a values-driven and self-directed approach to one's career, motivates self-awareness (Herrmann et al., 2015) required to achieve a clear and strong set of internal values (Hope et al., 2014) and adaptability, which are important for skill acquisition, continual reassessment, and updating of career capabilities (Fouad & Bynner, 2008). The third protean career process, career agency, facilitates the application of the two meta-competencies to actualize one's own value by engaging in specific career behaviors such as career planning, exploration, and networking (Wiernik & Kostal, 2019). These underlying mechanisms enable young protean people to take control of their career development (Rodrigues et al., 2020).

In Australia, young graduates face an increasingly insecure labor market with a reduction in full-time jobs and an increase in precarious employment (e.g., short-term, casual, and contract). Despite holding a tertiary education degree, un- and under-employment can demoralize and prevent them from fully utilizing their skills in the workplace (Carney & Stanford, 2018; Jackson, 2018). Indeed, in an increasingly dynamic professional career context, where tertiary training has come to be regarded as a basic prerequisite (Rodrigues et al., 2019), new graduates will benefit in the "war for talent" (Chambers et al., 1998, p.45) if they have developed these critical protean career processes. Thus, aiding students to develop them is an important aspect of enhancing overall PCO (Haenggli & Hirschi, 2020).

The relationships between PCO and the outcome variables of future employability, educational performance, and university commitment were explained largely by the protean career processes. This suggests that these underlying mechanisms are beneficial for young people as they enable them to increase their employability by forming a clear vocational identity and developing adaptability skills. This is consistent with recent evidence (Cortellazzoa et al., 2020) that new graduates, who were more protean oriented, and who had better developed career competencies including self-awareness and adaptability, were more employable as evidenced by receiving more initial job offers. Protean-oriented individuals are more likely to develop higher employable skills and achieve more sustainable careers by taking responsibility for their career and finding career opportunities that suit their identity (Clarke, 2017; De Vos et al., 2020; Guilbert et al., 2015). We add to the limited evidence that PCO is related to future employability via these protean processes and have extended that evidence to young student adults preparing for their transition to the workforce.

As expected, PCO was related to educational performance via these underlying career meta-competencies (i.e., vocational identity awareness and career adaptability). Protean students who have higher self-awareness are likely to choose education paths that are compatible with their values and, as a result, are likely to be more engaged and successful in their chosen study. University students with higher

self-awareness invest more time and attention on their study, leading to higher academic achievements than those with under-developed self-identities (Human-Vogel & Rabe, 2014; Lounsbury et al., 2005). Further, adaptability, which includes concern about career outcomes and curiosity, is arguably a driver of educational performance, as that is seen as a clear factor in future employment success (Avram et al., 2019; Collie et al., 2016). Thus, these protean career processes facilitate protean-oriented students to be absorbed and immersed in their studies, and, consequently, benefit their academic performance and, potentially, their later careers (Akkermans et al., 2018).

PCO also was related to student attachment to their university via these two career meta-competencies. In contrast, young people who are more disengaged from their identity express self-doubt and discontent with their current career choices and consider changing their educational institutions (Japutra et al., 2016; Negru-Subtirica & Pop, 2018). This result suggests that vocational identity awareness that arises from a PCO leads to better personal outcomes and strengthens institutional commitment. Those with higher adaptability have greater capacity to adapt to situations, thus are likely to feel greater satisfaction and affective attachment to the current institution (Wessel et al., 2008). This means that universities could improve retention and loyalty, which should enhance their reputation by having more satisfied and loyal graduates, by providing workshops and activities, either curricular or extra-curricular, to enhance vocational identity and career adaptability (Cownie, 2017).

There were no significant indirect paths from PCO to the outcomes via career agency, despite a weak relationship between agency and employability. The role of career agency in protean career theory has been understudied. In one of the few other studies to include agency, De Vos and Soens (2008) also failed to find an indirect path between protean career orientation and perceived employability via career self-management. These authors concluded that an individual's agentic efforts to proactively manage professional goals could not guarantee greater perceptions of successful employment. From our study, it seems likely that career agency is also insufficient to carry the effect of PCO to perceptions that young adults will be employable upon graduation. This is consistent with Hirschi et al. (2015) who found that career behaviors do not necessarily correspond to the positive perception of career attitudes and abilities.

Thus, career agency seems a less important underlying protean career process, at least for young adult students who might be more involved in academic-related tasks than career activities at the initial stage of their professional career. It is also possible that career agency is more important in explaining career outcomes and organizational commitment once they are near graduating or when adults in the workforce seeking a better fit for their internal values (Kim & Beehr, 2017). Other intervening variables might better represent career agency, and these need to be assessed. For example, self-efficacy and outcome expectations have been shown to explain the relationships between person and contextual variables and career outcomes (Lent & Brown, 2013; Lent et al., 1994, 2017).

To summarize, the study contributed to protean career theory by supporting empirical evidence for two of the three proposed explanatory mechanisms in Hall et al.'s (2018) model. The indirect effects of the meta-competencies were confirmed

on the paths from PCO to all outcomes in this sample of young adult students, suggesting that these aspects of the protean career framework are applicable in the tertiary education context and that the protean career outcomes used in our study appropriately represented Hall et al.'s (2018) outcomes. There was less support for the inclusion of career agency in the model, although additional research will need to confirm this or determine in what contexts it is applicable.

Practical implications

The study indicated that vocational identity awareness and career adaptability were critical processes that facilitated positive perceptions in young adult students for their studies and future career. As these processes are all potentially malleable (Lechner et al., 2017), intentionally designed interventions to enhance these processes can be implemented to assist young people to progress their future, achieve better in their academic tasks, and strengthen their attachment to their university. Strengthening students' vocational identity can give them confidence to pursue their chosen career, while enhancing adaptability will help them better prepare for and manage their occupational future, even when they face dynamic and changing career circumstances. It also is likely that enhancing the career resources of identity and adaptability will allow them to accumulate the required skills over a more extended period (Sortheix et al., 2013, 2015).

In addition, career counsellors should be aware that fostering active career-related behaviors (i.e., representing career agency) might not necessarily boost student confidence for study and future employment, especially for those who are more self-directed and values-driven. Instead of encouraging them to network, plan, and search for job opportunities, for example, they might prioritize developing their critical competencies (i.e., identity and adaptability), which could be connected later to optimistic perceptions of academic achievement, employment, and career behaviors.

Limitations and future research

While the current study represents an important test of the key mechanisms in protean career theory for young adults, some limitations need to be acknowledged. First, we could not make strong causal statements as our study was cross-sectional. Now that proof-of-concept has been demonstrated, future research needs to examine these key mechanisms and their relationships over time. Using a longitudinal design would clarify the temporal precedence of variables, including reverse and reciprocal causality in the orientation-process-outcomes relationships. Second, our sample included disproportionately more female students than males and they were drawn from one tertiary institution, which limits generalizability. While we found no strong sex differences in the study variables (see Table 1), more research is required to assess Hall et al.'s (2018) model using other samples, including non-students, those from different cultural backgrounds, and samples with equal sex representation. Third, more work is required to clarify how and under what conditions career agency might be an important process. We measured career agency as career

engagement as the theory defined it as visible career-related activities that translate career attitudes into behaviors (Hall et al., 2018). However, other agency measures might be more appropriate. If students focus more on their study than thinking about their career, study engagement might be a more appropriate agency scale for them. Last, although we tested future employability as an important educational outcome, other measures of career-related goals, such as perceived educational progress, need to be examined in student populations.

Conclusion

In conclusion, we provided support for protean career theory and extended its applicability to young adults preparing for entry to the workforce. We did this by demonstrating the underlying processes through which PCO is related to career-related outcomes. Our results supported that developing a stronger PCO can assist young adult students to develop stronger protean career processes, which in turn, can produce better career-related outcomes. Specifically, career identity awareness and adaptability were the important mechanisms in young adults, which suggests that holding, or developing, a PCO can be beneficial to young people when they are preparing for transition to the adult workforce.

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