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**Testing a Calling Model of Psychological Career Success in
Australian Young Adults: A Longitudinal Study**

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Abstract

Abstract

Theory-based longitudinal research on career calling is sparse. In a two-wave, cross-lagged panel design we assessed Hall and Chandler's (2005) calling model of psychological career success using 216 young adults (M age = 20.44 years, SD = 2.54). We tested if changes in career calling over time were associated with changes in goal-directed effort (work effort and career strategies) and psychological career success (life meaning and career adaptability) over time, and if goal-directed effort mediated between career calling and psychological career success over time. The standard causal model showed a better fit over the base, reverse, and reciprocal causation models. T1 career calling predicted T2 work effort, career strategies, life meaning, and career adaptability. Only career strategies mediated between T1 career calling and T2 life meaning and T2 career adaptability. Limitations and future directions are discussed.

Keywords: career calling, young adults, work effort, career strategies, life meaning, career adaptability

Testing a Calling Model of Psychological Career Success in Australian Young Adults: A Longitudinal Study

In times of career transition, such as when young people leave high school for university or enter the workforce, career calling is an important personal resource, which aids them in successfully managing the transition, developing their career, and achieving career success (Hall & Chandler, 2005). In recent years, research on career calling, which largely indicates that young people with a calling are advantaged in terms of well-being and the development of career-related behaviours and attitudes, has flourished (see Duffy & Dik, 2013 for a review). However, much of this research has been atheoretical, with only a handful of studies guided by theoretical models (see, for example, Duffy & Autin, 2013), and much has been cross-sectional (Duffy & Dik, 2013). As career calling is a developmental construct (Hunter, Dik, & Banning 2010; Praskova, Creed, & Hood, 2014), longitudinal research is especially important to tease out developmental trajectories and clarify causal relations. The current study contributes to a better understanding of career calling by using Hall and Chandler's (2005) calling model of psychological career success to test the across-time relations between calling and effortful behaviour (operationalised as work effort and career strategies) and psychological career success (life meaning and career adaptability).

Career Calling

While there is no standard definition of career calling, conceptualisations can be categorised as either traditional or neoclassical (i.e., religious, or other external source of a calling, and a sense of destiny and pro-social duty) or modern (an internal drive for self-fulfilment and happiness; Bunderson & Thompson, 2009; Duffy & Dik, 2013). Career calling has been considered as a transcendent summons to a meaningful career used to serve others (Dik & Duffy, 2009), a consuming, meaningful passion (Dobrow & Tosti-Kharas, 2011), work perceived as one's purpose in life (Hall & Chandler, 2005), and a course of action in

pursuit of pro-social intentions (Elangovan, Pinder, & McLean, 2010). Scholars generally agree that people with a calling consider their work to be deeply meaningful and approach it with a strong sense of purpose and desire to contribute to others in some way (Dik & Duffy, 2009; Hall & Chandler, 2005; Steger, Pickering, Shin, & Dik, 2010).

The literature suggests that career calling is a developmental construct tied to general career developmental tasks, which starts to emerge in adolescence or earlier, becomes salient for young people, and is shaped over time (Dobrow, 2007; Hunter et al., 2010; Wrzesniewski, 2012). Thus, career calling is expressed differently in young adults than in adults, who are already living their calling in the workplace (Duffy & Autin, 2013; Praskova et al., 2014). Developmentally, young adults (approx. 18 to 25 years old) are in the process of transitioning from high school to work or further education. Their main developmental tasks are to abandon some earlier goals, establish new goals relevant to their studies, future profession, and life in general (Arnett, 2000; Havighurst, 1953/1961), and to engage in career preparatory processes relevant to reaching purposeful and meaningful work (Berg, Grant, & Johnson, 2010; Hall & Chandler, 2005).

Career calling in young adulthood involves identifying strong, long-term, abstract, personal goals, which can be manifested in future-oriented actions and attitudes applied to motivate, pursue, and manage the goals (Duffy & Dik, 2013; Praskova et al., 2014). This view is consistent with goal-setting theory (Locke & Latham, 1990) and other views that describe calling as a context-specific goal (Duffy & Dik, 2013) that promotes human agency (Elangovan et al., 2010; Hall & Chandler, 2005). Specifically, responding to a career calling might involve complex exploratory and planning behaviours, a willingness and effort to engage in career-related activities (Elangovan et al., 2010; Hall & Chandler, 2005), and career and life preparatory behaviours, such as developing relationship skills (Arnett, 2000). From this perspective, and for the purpose of this study, a career calling in young adults

refers to a “mostly self-set, salient, higher-order, career goal, which generates meaning and purpose for the individual (and the community), and which has the potential to be strengthened (or weakened) by engaging in goal-directed, career-preparatory actions and adaptive processes aimed at meeting this goal” (Praskova et al., 2014, p. 3).

Generally, however, researchers have not clearly articulated an overarching theoretical framework when examining career calling, and the research has been predominantly cross-sectional. This limits our knowledge of how career calling might relate to individual behaviour more generally, and how it might affect people over time (Duffy & Dik, 2013). Despite this, the current evidence indicates that career calling in young people has been associated with general well-being, such as life satisfaction and psychological adjustment (e.g., Steger et al., 2010) and domain-specific well-being, such as academic satisfaction and career choice comfort (Duffy, Allan, & Dik, 2011; Duffy & Sedlacek, 2007). Young adults with a career calling also report having more career information (Duffy & Sedlacek, 2007) and greater career involvement (Hirschi, 2011). They are more decided, confident, and clear about their career (Dobrow & Tosti-Kharas, 2011; Duffy & Sedlacek, 2007), and have more positive career attitudes and outcome expectations (Dik, Sargent, & Steger, 2008; Steger et al., 2010). In sum, young people with a career calling benefit from better well-being and more positive career development.

However, only a handful of studies has been guided by, or embedded in, general theoretical models, such as the psychology of working framework (Duffy & Autin, 2013), indicating the need to build a stronger, domain-specific, theoretical foundation for the construct (Duffy & Dik, 2013). Hall and Chandler (2005), who also consider calling from a goal-setting perspective (i.e., a calling is “work that a person perceives as his purpose in life”, p. 160) proposed a specific calling model of psychological career success that is relevant to young adults in transition (See Figure 1 for the full model). The model describes the

development of a career calling as an ongoing, cyclical, and adaptive process, involving setting and exploration of career goals, trial efforts, and evaluations of success. However, to date, this model has not been tested in the career calling domain. The main aim of this study was to address this by testing this model using a short-term, longitudinal design, and a sample of young adults.

The Calling Model of Psychological Career Success

The calling model of psychological career success (Hall & Chandler, 2005) challenges the single, life-long, staged, career perspective (e.g., Super, 1980) with a perspective of a series of shorter learning cycles of exploration, trial, establishment, and mastery. In this model, career calling initiates a positive and adaptive cycle, in which individuals develop and engage in self-directed behaviours in the context of their career environment. Specifically, those with a calling develop a strong focus on those goals that reflect their purpose, and become self-directed and effortful in the pursuit of their calling (see Figure 1). Effortful behaviour in the career domain is reflected in cognitive motivational processes that direct and guide attention towards meaningful career-oriented activities, increase effort and time towards completing these activities, and maintain persistence in the face of setbacks (De Cooman, De Gieter, Pepermans, Jeggers, & van Acker, 2009; Elangovan et al., 2010; Hall & Chandler, 2005). Individuals utilise their (career) knowledge and engage in career strategies, such as networking, planning, and seeking career information and guidance, which enhances their career competitiveness, better equips them to manage future obstacles, and guides their actions towards attaining career goals (Gould & Penley, 1984; Locke & Latham, 1990; Savickas, 1999). In support of the model, career calling in young adults is related to having more educational information, engaging in more career planning and career calling activities (Dobrow, 2007; Duffy & Sedlacek, 2007; Hirschi & Herrmann, 2013), and increased effort and dedication (Hunter et al., 2010). The use of career strategies (e.g., creating opportunities,

seeking career guidance) is also found in adults with a calling (Duffy, Dik, & Steger, 2011; Park, 2010).

H1: from this, our first hypothesis is that career calling will be associated with later effortful behaviour (operationalised as work effort, a, and career strategies, b).

Hall and Chandler (2005) argue that the result of self-directedness and goal effort when pursuing a career calling is a greater perception of success, especially the internal, self-referent, psychological criteria of success, which aligns a career with one's values, attitudes, beliefs, and sense of self (vis-à-vis objective success, which is linked to external recognitions and attainments). According to the model, the perception and evaluation of psychological success then stimulates identity growth (or change), which, in turn, reinforces one's career calling. In line with this, individuals with a strong career calling work primarily for the fulfilment and the meaning it brings to their and other's lives, rather than working as a means of gaining an income or career advancement (Hall, 1996; Wrzesniewski, McCauley, Rozin, & Schwartz, 1997). Identified markers of psychological career success include life, job, and career satisfaction, career adaptability, self-perceived employability, contribution to others, work-life balance, and continuous self-development (Arnold & Cohen, 2008; Arthur, Khapova, & Wilderon, 2005; Dries, Pepermans, & Carlier, 2008). For the purpose of this study, we operationalized psychological career success as life meaning and career adaptability.

Life meaning can be defined as "the extent to which people comprehend, make sense of, or see significance in their lives, accompanied by the degree to which they perceive themselves to have a purpose, mission, or over-arching aim in life" (Steger, Oishi, & Kashdan 2009, p. 43). This is relevant to young adults, as they make decisions about their future career and life, realise their abilities, and formulate and pursue goals linked to reaching meaningful work as adults (Berg et al., 2010; Nurmi, 1993; Park, 2004). McGregor and Little

(1998) demonstrated that finding meaning is an important outcome of pursuing personal goals. In the career domain, career calling is associated with life meaning in young adults (e.g., Dik et al., 2008; Duffy, Manuel, Borges, & Bott, 2011) and subjective career success in employed adults (Park, 2010).

H2a: Career calling will be associated with later life meaning.

Career adaptability is manifested in the management of setbacks, the re-alignment of goals, and achievements in shorter-term goals, which are stepping stones to an eventual career. Young adults who have not yet entered the full-time labour force are likely to face temporary setbacks and failures during their career pursuit. Consequently, career success for them is more likely to be manifested in greater career adaptability (Savickas, 1997). Hall and Chandler (2005) noted that a strong sense of purpose (career calling) enables individuals to manage career obstacles, adapt to changing situations, and be resilient, positive, and flexible in making the necessary personal changes, as they believe in their ultimate success. Thus, from the calling model of psychological career success, a calling promotes career adaptability. As an important agentic construct for young adults (Creed, Fallon, & Hood, 2009; Skorikov, 2007) and the key competency in career success (Hall & Chandler, 2005; O'Connell, McNeely, & Hall, 2008), career adaptability is reflected in the individual's capacity to successfully manage and adapt to career developmental tasks and transitions (Karaevli & Hall, 2006; Savickas, 1997) and adjust goals (Bandura, 1991). Research indicates positive associations between career preparation variables that tap aspects of career calling (e.g., career maturity, career decidedness) and adjustment (Creed & Patton, 2003; Creed, Patton, & Bartrum, 2004; Skorikov, 2007), but no study has investigated the effects of a calling on success variables that tap the ability to adjust to career changes.

H2b: Career calling will be associated with later career adaptability.

From the career calling model of psychological career success, a career calling fosters

goal-directed motivation and determination, reflected in effort and the use of career strategies, which aim at managing the individual's career direction. Effort and the application of strategies foster well-being, bring meaning to one's life, and have positive effects on perception of success (Gould & Penley, 1984; Hall & Chandler, 2005; Rosso, Dekas, Wrzesniewski, 2010). In support, research shows that activities that reflect one's personal development and foster challenge and exertion of effort are associated with better psychological well-being in young people (Waterman, 1993). In adults, engaging in career strategies, such as creating opportunities, continuous learning, and networking, are associated with greater subjective career success (Nabi, 2003; Park, 2010), and intrinsic work motivation and engaging in organisational citizenship behaviours are associated with perceptions that work is meaningful (Steger, Dik, & Duffy, 2012).

H3: Work effort and career strategies will be associated with later life meaning (a, b) and later career adaptability (c, d).

Last, Hall and Chandler (2005) in their calling model proposed that effortful behaviour was an important driving force between a sense of calling and perception of career success. This is consistent with Bandura (1991, pp. 248-249), who argued that human behaviour is "directed by cognised goals" that, through the use of goal-directed motivational mechanisms, are "translated into incentives and guides for purposive actions". These processes are applied by individuals to reduce inconsistencies between their current situation and the situation they want to be in (Locke & Latham, 2006), and act as crucial driving forces in the goal-outcome relation (Kanfer & Heggstad, 1997; Locke & Latham, 1990). Thus, our study, guided by Hall and Chandler's (2005) model, assesses the mediation effects of work effort and career strategies in the relation between career calling and life meaning, and between career calling and career adaptability.

H4: Career calling will be associated with later work effort and career strategies, which,

in turn, will mediate the relation between career calling and later life meaning and career adaptability.

Current Study

To date, there is limited longitudinal evidence on career calling in young adults, the directionality of the relations remains unclear (Duffy & Dik, 2013), and no longitudinal research has assessed complex relations surrounding career calling. Thus, we contribute to the career calling literature by testing Hall and Chandler's (2005) calling model of psychological career success. We employ a longitudinal, panel design, which traces young adults' career development over two points in time, assesses the effects of current career calling on future perceptions of psychological career success, and tests the processes driving these effects (mediators) over time. We also test additional reverse and reciprocal variants to our causal model to clarify directionality.

Method

Participants

Participants at T1 were 683 young adults (M age = 20.23 years, SD = 2.46; 75.2% female). At T2, we contacted 520 who had provided consent for that. The sample used in this study comprised 216 young people who responded and for whom we had T1 and T2 data (41.5%), with mean age of 20.43 years (SD = 2.53; range 17 - 25 years; 81% female). They were working (58.1%) or non-working (34 %) university (bachelor and post-graduate degree programs of health, business, arts, law, science, education, and engineering) or technical college students (vocational certificates and diplomas in fitness, welfare, tourism, hospitality, and commerce), or in the labour force, either working or seeking employment (7.9%). Their self-reported, mean academic achievement level in the final year at high school ("What grade did you typically receive in your final year at high school?") was 1.86 (SD = 0.66) on a 5-point scale ranging from 1 = *very high achievement* to 5 = *very limited achievement*. In terms

of financial situation, 35.2% described themselves as a little or much better off than others, 38% as about the same as others, while 26.8% reported being a little or much worse off than others. Participants were predominantly Caucasian Australian, recruited from a large regional city on the east coast of Australia.

Measures

Unless stated otherwise, all scales use a 6-point Likert-type scale with endpoints of 1 = *strongly disagree* and 6 = *strongly agree*. Higher summed scores indicate more of the trait.

Career calling. The 15-item Career Calling Scale devised by Praskova et al. (2014) was used to assess cognitive, behavioural, and affective aspects of career calling across three domains of personal meaning (e.g., “Preparing for my career is contributing to my personal growth”), other-oriented meaning (e.g., “It is my calling to benefit others in my future chosen career”), and active engagement (e.g., “All I want to do now is to pursue the career that is inspiring me”), which reflect career calling as a “salient career goal that is personally meaningful and oriented toward helping others” (p. 1). Praskova et al. used two samples of young adults to develop the scale. They demonstrated content validity by using focus groups and expert reviewers. They supported structural validity by confirming that the three domains loaded onto a 2nd-order factor of calling, and supported construct validity by distinguishing their scale from search for calling, and showing expected, positive correlations with presence of calling and life satisfaction, and a negative correlation with career indecision. The authors reported an internal reliability of .88 in a sample of young adults. Alphas in the current study were .91 (T1) and .92 (T2).

Goal-directed effort. Two measures were used. The first was the 10-item Work Effort Scale (De Cooman et al., 2009), which taps three aspects of direction, intensity, and persistence. Three items were modified to suit our sample of young adults (e.g., the item, “I really do my best to achieve the objectives of the organization”, was amended to, “I really do

my best to achieve the objectives I set for myself”). De Cooman et al. (2009) reported an internal reliability coefficient of .90 and a 3-week test-retest correlation of .72 in their sample of adult employees, and, in support of validity, the scale correlated positively with self-reported performance and job satisfaction. The alphas for our sample were .94 (T1) and .95 (T2).

The second measure was the 26-item Career Strategies Inventory (Gould & Penley, 1984). This assesses a range of career strategies, including work involvement, seeking career guidance, creating career opportunities, and self-presentation. Again, several items were modified to suit the young adult sample. In response to this stem, “In respect to my career future, I am...”, participants responded to items such as, “...getting career guidance from experienced people in my chosen field”. Perkins (2012) used an amended version of this scale with young adults and found a single factor, an internal reliability coefficient of .91, and expected associations with career exploration and planning. Internal reliabilities for our sample at T1 and T2 were .92 and .93, respectively.

Psychological career success. Two measures were used. First, we used five items from the 10-item Presence and Search for Meaning in Life Questionnaire (Steger, Frazier, Oishi, & Kaler, 2006), which measure the general sense of the presence of meaning and significance in one’s life. Participants responded to items such as, “My life has a clear sense of purpose”, on a 6-point Likert-type scale with endpoints of 1 = *absolutely untrue* and 6 = *absolutely true*. The subscale, used previously with university students, showed good internal reliability of .86 and 1-month test-retest reliability of .70, and had expected positive associations with life satisfaction, extraversion, and religiosity, and negative associations with depression and neuroticism (Steger et al., 2006). Steger et al. (2006) confirmed the factor structure in three independent samples, demonstrated convergent validity with other measures of meaning and discriminant validity by finding higher correlations with meaning measures than with

measures of well-being. The alphas for our sample were .92 (T1) and .91 (T2).

The second measure was the 11-item Career Adaptability Subscale from the 25-item Career Futures Inventory, which assesses the capacity to cope with and capitalise on change and recover when unforeseen events alter career plans (sample item, “I can adapt to changes in my career plans”; Rottinghaus, Day, & Borgen, 2005). Two items were modified: the item, “I am good at adapting to new work settings”, was amended to, “I am good at adapting to new tasks when I have to”, and the item, “I enjoy tackling new work-related tasks”, was amended to, “I enjoy tackling new challenges”. Rottinghaus et al. (2005) confirmed the factor structure of the measure, and found expected, positive correlations with career maturity, skills confidence, extraversion, conscientiousness, positive affect, and problem solving in samples of university students. They also reported a strong internal consistency of .85 and sound, 3-week, test-retest reliability of .63. The alphas for our sample were .86 (T1) and .87 (T2).

Procedure

Approval was granted by the authors’ university ethics committee. This study forms part of an ongoing project that is examining the assessment and the effects of career calling for young adults’ career development and well-being (Praskova et al., 2014). The current study utilised a two-wave, longitudinal, panel design, which involved collecting the same variables at T1 and T2. T2 data were collected 6 months after T1, which allowed for sufficient time to observe changes in young adults’ career lives. The survey was distributed both online and in paper-and-pencil format at T1 using several approaches: advertisements on university and social websites, and university-wide broadcast email sent to students and staff. Staff of the technical college distributed paper surveys as they were not able to distribute them electronically. These were returned to the research team in a sealed envelope. Participants, who at T1 agreed to participate in a second part of the study, and who provided their contact details, were re-contacted for the T2 online survey. Participants were able to enter a prize

draw for \$50 (T1) and \$100 (T2) shopping vouchers.

Results

First, we conducted an attrition analysis by comparing those who did not complete the T2 survey with those who completed both T1 and T2 surveys. No differences were found for age ($p = .15$) or financial situation ($p = .84$). The two groups also did not differ on T1 career calling ($p = .71$), work effort ($p = .05$), career strategies ($p = .09$), career adaptability ($p = .89$), and life meaning ($p = .84$). However, the drop-out group had significantly more young males (28% vs. 19%, $p = .01$), and reported lower academic achievement ($M = 2.03$ vs. 1.86, $p = .003$). Thus, some caution is needed when interpreting the results.

Data from the 216 matched surveys revealed a very small portion of missing values (0.22%; 89 values). Little's omnibus MCAR test indicated these were missing completely at random, $\chi^2(29\ 575, N = 216) = 417.42, p = .99$. They were replaced by the participant's mean on that variable. To avoid violating the recommended ratio of between 5:1 and 10:1 for participants to the numbers of parameters estimated in a latent variable analysis (Bentler & Chou, 1987), we employed multi-item composites (parcelling) to form observed variables to represent the latent variables for all scales for the two times (Landis, Beal, & Tesluck, 2000). This method also produces more stable parameter estimates and more balanced measures of a construct (Hau & Marsh, 2004; Landis et al., 2000). To create the parcels, we followed Landis et al.'s recommendations, and conducted separate exploratory factor analyses for each scale, rank ordered the factor loadings within each scale, and then allocated individual items to the parcels using an item-to-construct balance approach (i.e., assigning highest and lowest loading items across parcels). We created two parcels for each scale at T1 and T2, except for the longest, 26-item, Career Strategies Scale, which was better represented by three parcels.

For all models, we employed structural equation modelling using maximum likelihood estimation available in AMOS 21. First, we assessed a measurement model to confirm that all

latent variables for T1 and T2 were represented by their parcels. Next, we assessed a cross-lagged, structural model, in which we compared four possible, across-time, causal relations (de Lange, Taris, Kompier, Houtman, & Bongers, 2004). The first, *baseline model*, only included paths from each T1 variable to the corresponding variable at T2. This model contained no cross-lagged, or causal, paths between the predictor and outcomes; rather, it only estimated the stability of each variable over the 6-months period. This model was used as the reference model when comparing the fit of the other three competing models. The second, *standard causation model*, contained added cross-lagged paths to the baseline model from the T1 predictor (career calling) to the T2 outcomes (work effort, career strategies, life meaning, and career adaptability). This model tested if the predictor at T1 was associated with the outcomes at T2, after controlling for the effects of the outcomes at T1 (i.e., after controlling for the stability effects). The third model tested the *reverse causation* effects, by adding cross-lagged paths to the baseline model from the T1 outcomes to the T2 predictor (career calling). This model tested the reverse effects of the standard causation model, and assessed if the outcomes at T1 were associated with the predictor at T2, after controlling for the effects of the predictor at T1. The fourth, *reciprocal causation model*, has added cross-lagged paths from the T1 predictor to the T2 outcomes, as well as paths from the T1 outcomes to the T2 predictor. As variables can be reciprocally related over time (i.e., both predictor and outcome variables influence one another over time), this model tested if the predictor at T1 was associated with the outcomes at T2, while also testing if the outcomes at T1 were associated the predictor at T2, again after controlling for the stability effects. We used the chi-squared difference test to assess the differences among the competing nested models. When a difference was not found, we selected the most parsimonious model using the Akaike Information Criterion (AIC; accepting the model with the smallest AIC value; Kline, 2011). In longitudinal panel models, the measurement error covaries across time (Cole

& Maxwell, 2003); thus, we allowed cross-wave error terms for the same variable to correlate. We also allowed for within-wave covariation among T2 error terms (Cole & Maxwell, 2003).

Last, we assessed whether work effort and career strategies mediated between career calling at T1 and life meaning and career adaptability at T2. We followed recommendations for a two-wave design and tested for mediation using a three-step approach (Cole & Maxwell, 2003; Taris & Kompier, 2006), which is in line with Baron and Kenny's (1986) recommendations. First, we tested the cross-lagged relation between the predictor at T1 (career calling) and the outcome variables at T2 (life meaning and career adaptability) without paths to the mediators. Second, we assessed the cross-lagged relations between the predictor at T1 and the mediators at T2 (work effort and career strategies). Third, we assessed the cross-lagged relation between the mediators at T1 and the outcomes at T2 (life meaning and career adaptability). In addition, we assessed the model fit of each step of the standard causal model compared to the competing models (reverse and reciprocal causal models) in order to test for omitted paths, and specifically, for the presence/absence of "theoretically backward" effects (Cole & Maxwell, 2003; p. 571). Only a partial mediation can be confirmed in two-wave designs, and this can be said to occur when all paths in the hypothesised mediated relations are significant. Multiplication of the standardised regression coefficients for these relations gives an estimate of the mediation effect (Cole & Maxwell, 2003; Taris & Kompier, 2006).

For all analyses, we followed Hair, Black, Babin, and Anderson's (2010) recommendations for a sample ≤ 250 participants and > 12 observed variables, and assessed model fit using chi-square (χ^2 ; significant p value with good fit), the normed chi-square ($\chi^2/df < 3.0$ suggests a good fit), the Comparative Fit Index ($CFI \geq .95$ expected), the Tucker-Lewis Index ($TLI \geq .95$), and the root mean-square error of approximation ($RMSEA < .08$).

Measurement Model

The measurement model consisted of five latent variables each for T1 and T2, represented by their parcels (i.e., career calling, work effort, career strategies, life meaning, and career adaptability). The model showed good fit, $\chi^2(160) = 304.09$, $p = .001$, $\chi^2/df = 1.90$, CFI = .97, TLI = .96, and RMSEA = .06, and contained no problematic cross-loadings. Factor loadings were all significant ($p < .001$; range .78 to .97), supporting construct validity of the scales. All correlations among latent variables were significant ($p < .001$; range = .32 to .79) and were consistent with the correlations among the observed variables (see Table 1).

Cross-Lagged Structural Models

The zero-order correlations between demographic and outcome variables were trivial to weak, and were not included as covariates (r range for age = -.05 to .14; gender = -.01 to .07; achievement = -.13 to -.07; financial situation = -.18 to -.13). Fit statistics for all subsequent analyses and the AIC values are presented in Table 2. The baseline model yielded satisfactory fit statistics. All the autoregressive paths between T1 and T2 variables were significant ($p < .001$) and showed moderate-to-large regression coefficients (β ; career calling = .78; strategies = .67; effort = .64; meaning = .67; adaptability = .71) over the 6-month period. The standard causality model was significantly different and improved from the baseline model ($\Delta\chi^2 = 31.46$, $\Delta df = 4$, $p < .001$), as was the reciprocal model ($\Delta\chi^2 = 36.15$, $\Delta df = 8$, $p < .001$), but not the reverse model ($\Delta\chi^2 = 5.31$, $\Delta df = 4$, $p > .05$). Further comparisons showed that the causal model was not a better fit than the reciprocal model ($\Delta\chi^2 = 4.15$, $\Delta df = 4$, $p > .05$), but, based on the AIC values, the causal model, having the smallest AIC value of 515.77, was accepted as the most parsimonious and best fitting model (see Table 2). In this model, career calling at T1 predicted increased work effort ($\beta = .15$, $p = .016$) and more use of career strategies ($\beta = .17$, $p = .016$) at T2, supporting H1(a) and H1(b), and predicted greater life meaning ($\beta = .17$, $p = .016$) and increased career adaptability ($\beta = .29$, $p < .001$) at T2,

supporting H2(a) and H2(b). See Figure 2.

Mediation Models

To assess whether work effort and career strategies mediated the relation between career calling and the outcome variables of life meaning and career adaptability, we first assessed the direct effect of career calling as a predictor at T1 on the outcomes at T2 without adding paths to the mediators (Step 1). As seen in Table 2, this causal model showed good fit statistics and indicated that career calling at T1 had direct, significant, and positive effects on T2 life meaning ($\beta = .16, p = .019$) and T2 career adaptability ($\beta = .24, p < .001$).

We then tested if T1 career calling predicted the T2 mediation variables of work effort and career strategies (Step 2), and compared this model to its competing baseline, reverse-causation, and reciprocal models (see Table 2). The standard causal model ($\Delta\chi^2 = 5.33, \Delta df = 2, p < .05$), but not the reverse-causation ($\Delta\chi^2 = 0.39, \Delta df = 2, p > .05$) or reciprocal models ($\Delta\chi^2 = 6.24, \Delta df = 4, p > .05$), was significantly different to the baseline model, and was accepted as the best fitting model. In this standard model, T1 career calling predicted T2 career strategies ($\beta = .16, p = .018$), but not work effort ($\beta = .02, p = .70$). Work effort, thus, no longer met the criteria for mediation and was not included in further analyses.

The last step, Step 3, assessed whether the potential T1 mediator (career strategies) predicted the T2 outcome variables of life meaning and career adaptability, which also included testing and comparing four models (baseline, causal, reverse-causation, and reciprocal models; see Table 2). In this step, the standard causal ($\Delta\chi^2 = 11.60, \Delta df = 2, p < .005$) and the reciprocal models ($\Delta\chi^2 = 14.41, \Delta df = 4, p < .01$) were significantly different and improved over the baseline model, but the reverse-causation model showed no better fit than the baseline model ($\Delta\chi^2 = 2.35, \Delta df = 2, p > .05$). The standard causal model was not significantly different to the reciprocal model ($\Delta\chi^2 = 2.81, \Delta df = 2, p > .05$), but had the lowest AIC value (531.63); thus, it was accepted as the most parsimonious model. This

indicated that career strategies at T1 predicted T2 life meaning ($\beta = .14, p = .014$) and T2 career adaptability ($\beta = .17, p = .003$), supporting H3 (b and d).

From these analyses, it can be concluded that career strategies partially mediated the effect of career calling on life meaning and career adaptability over time. That is, changes in career calling from T1 to T2 were associated with changes in career strategies from T1 to T2, which, in turn, were associated with changes in life meaning and career adaptability from T1 to T2, supporting H4. Multiplying the regression coefficient at Step 2 (calling to strategies) with the regression coefficients at Step 3 (strategies to life meaning and adaptability) indicated that the calling-strategies-life meaning mediation pathway accounted for 2% of the variance, while the calling-strategies-adaptability mediation pathway accounted for 3% of the variance. We added the significant pathways of the Step 3 analysis to Figure 2.

Discussion

This study assessed the calling model of psychological career success (Hall & Chandler, 2005), which has not been tested previously. This model emphasises the role of career calling as an important personal initiator of goal-related effort and actions, which, in turn, predict psychological career success and identity growth or change (Hall & Chandler, 2005). This model is applicable to young adults in transition who set, plan, and work towards their future-oriented career goals, but often face setbacks and disillusionment, and make changes to their career plans. Specifically, we added to the career calling literature by testing whether career calling was associated with effortful behaviour (work effort and career strategies) and psychological career success (life meaning and career adaptability), and tested whether these relations were mediated by work effort and career strategies. We employed a cross-lagged, longitudinal, panel design, and tested standard, reverse, and reciprocal causal models to examine the currently unclear directionality of the relations (Duffy & Dik, 2013).

All results demonstrated that the standard causal models (vis-à-vis base, reverse, and

reciprocal models) were best fitting. This shows that the causal relations among our study variables were consistent with Hall and Chandler's (2005) propositions that career calling stimulates self-directed and effortful behaviours and greater perceived psychological career success. First, young adults with higher levels of career calling reported greater work effort and higher use of career strategies over time (H1). This is consistent with similar findings found in cross-sectional and qualitative research (e.g., Duffy & Sedlacek, 2007; Hunter et al., 2010), and indicates that young adults higher on career calling engage in more goal-oriented cognitions, activities, and career strategies.

Second, consistent with the calling model of psychological career success, that setting and pursuing important goals stimulates positive perceptions of success, we found that those with stronger career callings reported greater presence of meaning in their lives 6-months later (H2a). Similar associations were found in cross-sectional literature (e.g., Dik et al., 2008), although Duffy, Manuel, et al. (2011) found a reverse causal relation with medical students over a 2-year period. From these results, it might be that the relation between calling and meaning is reciprocal, and that the direction of causality is linked to the time over which measures are taken. Future research needs to tease this out.

Third, a stronger career calling at T1 was associated with elevated career adaptability at T2. Career adaptability, which is a key competency in career success and an important developmental marker for young adults (O'Connell et al., 2008; Skorikov, 2007), had the strongest association with career calling. This is an especially important finding as the only existing study, Dobrow and Tosti-Kharas (2012), suggests that young adults with a career calling have a narrower career vision, and are less receptive to advice about changes to career plans over time. However, Dobrow and Tosti-Kharas' main sample comprised of young musicians; it is possible that a tunnel career vision might be linked to highly competitive fields, in which career paths and resulting success is defined very narrowly. The current study

demonstrated that when a general sample of young adults is used, career calling is associated with adaptability. More longitudinal research is needed to assess the positive and the dark sides of a career calling. From our theoretical perspective, which emphasises positive and adaptive learning cycles in career development, career calling is expected to promote greater flexibility. This is consistent with others, who suggest that setting, committing to, and investing in healthy pursuit of career calling leads to increased openness to goal discrepancies and a greater capacity to adapt career goals (Cardador & Caza, 2012).

Last, we assessed the mediation effects suggested in the calling model of psychological career success. We found that young adults with a stronger career calling engaged in more career strategies over time, which, in turn, predicted better life meaning and more career adaptability over time. This mediation was partial, and was consistent with theories that argue that goal-directed motivational processes are employed to diminish goal discrepancies, and act as driving forces in the goal-outcome relation (Locke & Latham, 1990, 2006).

Unexpectedly, we failed to demonstrate similar mediation effects for effort. There are several potential explanations for this result. First, our measure of work effort might have been too general, and assessing effort towards a specific career goal might be more suitable. Second, we might have had insufficient statistical power to detect significant cross-lagged effects over time after controlling for the autoregressive effects, which were relatively strong in our study (Taris & Kompier, 2006). Last, our study employed a 2-wave design, which has the tendency to underestimate mediation effects (Taris & Kompier, 2006). This might also explain the relatively small, but significant, cumulative mediation effect, of career strategies.

Limitations and Future Directions

There were disproportionately more females in this study and greater drop-out rates for males and those with lower academic achievement from T1 to T2, which could have affected our results. While we found trivial relations between gender, academic achievement, and the

study variables, which have also been found by others (e.g., for career calling, Dobrow & Tosti-Kharas, 2012; Duffy & Autin, 2013), future studies need to assess the model on more representative samples, and better control for attrition. Second, we did not test all propositions of the calling model of psychological career success. We did not, for example, test for the effects of contextual factors (as moderators) acting at various stages in the model: when setting an important calling goal, exerting effort to enact the goal, and reaching career success (Hall & Chandler, 2005). For example, it is important to assess the role of perceived and actual barriers that many young adults face during their career development.

Additionally, we did not test the role of self-confidence, which also instigates the positive developmental cycles, or test the feedback loops that result from changed identity to other model variables that operate after achieving subjective career success (see Figure 1; Hall & Chandler, 2005). Last, career calling has been linked primarily with psychological career success (Hall, 1996; Wrzesniewski et al., 1997). However, the calling model of psychological career success also proposes accounting for other outcome variables, including objective success. Future research could assess variables relevant to young adults, such as academic and career achievement and recognition.

Conclusion

Young adults with stronger career callings were more motivated to invest effort and use career-related strategies, which in turn, led to more positive perceptions about their career success. These findings will be useful to school educators and career counsellors in assisting young people to identify their life and work values, set and commit to their calling goals, and adapt attitudes and exert effort in activities that motivate their meaningful career pursuit. The current study also provides important empirical support for the calling model of psychological career success.

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Table 1

Means, Standard Deviations, and Bivariate Correlations Among all Variables at T1 and T2 (N = 216)

Variables	<i>M</i>	<i>SD</i>	Range	1	2	3	4	5	6	7	8	9	10
1. Career calling T1	67.68	11.58	25-90		.74	.48	.40	.56	.43	.59	.47	.41	.48
2. Career calling T2	67.44	11.38	20-90	.79		.36	.46	.43	.49	.53	.67	.29	.51
3. Work effort T1	49.53	7.17	27-60	.50	.39		.65	.39	.27	.47	.34	.50	.45
4. Work effort T2	48.07	7.57	19-60	.41	.49	.67		.35	.41	.39	.46	.38	.65
5. Career strategies T1	102.23	18.30	33-156	.61	.47	.43	.38		.65	.37	.34	.46	.45
6. Career strategies T2	101.43	18.83	55-145	.50	.56	.34	.49	.67		.30	.40	.33	.45
7. Life meaning T1	21.17	5.51	5-30	.63	.57	.51	.42	.40	.36		.65	.42	.38
8. Life meaning T2	20.89	5.41	5-30	.51	.71	.38	.51	.36	.45	.68		.26	.48
9. Career adaptability T1	51.60	6.69	26-66	.44	.34	.56	.44	.50	.40	.49	.32		.66
10. Career adaptability T2	51.42	6.24	28-66	.51	.56	.50	.71	.51	.55	.42	.54	.71	

Note. Zero-order correlations reported above the diagonal. Correlations among the latent variables are reported below the diagonal. All correlations were significant at $p < .001$.

Table 2

Fit Statistics for the Cross-Lagged Structural and Mediation Models (N = 216)

Model	χ^2 ^a	df	χ^2/df	CFI	TLI	RMSEA	AIC
Cross-lagged structural models							
Baseline model	403.23	185	2.18	.96	.95	.07	539.23
Causal model ^b	371.77	181	2.05	.96	.95	.07	515.77
Reverse model	397.92	181	2.20	.96	.94	.08	541.92
Reciprocal model	367.62	177	2.08	.96	.95	.07	519.62
Mediation models							
Step 1 - Causal model ^b	381.59	183	2.09	.96	.95	.07	521.59
Step 2 - Causal model ^b	397.90	183	2.17	.96	.95	.07	537.90
Reverse model	402.84	183	2.20	.96	.94	.08	542.84
Reciprocal model	396.99	181	2.19	.96	.94	.08	540.99
Step 3 - Causal model ^b	391.63	183	2.14	.96	.95	.07	531.63
Reverse model	400.88	183	2.19	.96	.94	.07	540.88
Reciprocal model	388.82	181	2.15	.96	.95	.07	532.82

Note. ^a All χ^2 significant at $p < .001$ level. ^b Most parsimonious model.

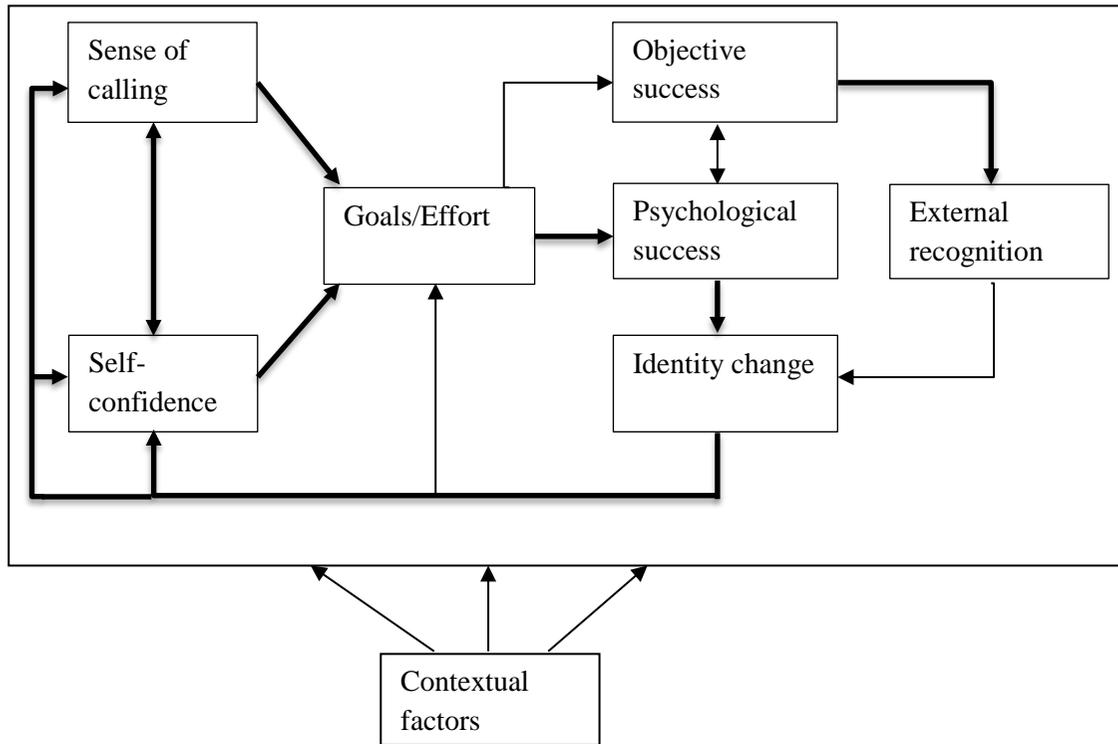


Figure 1. The calling model of career success. Highlighted paths represent the strongest associations (with permission, adapted from Hall and Chandler, 2005, p. 165).

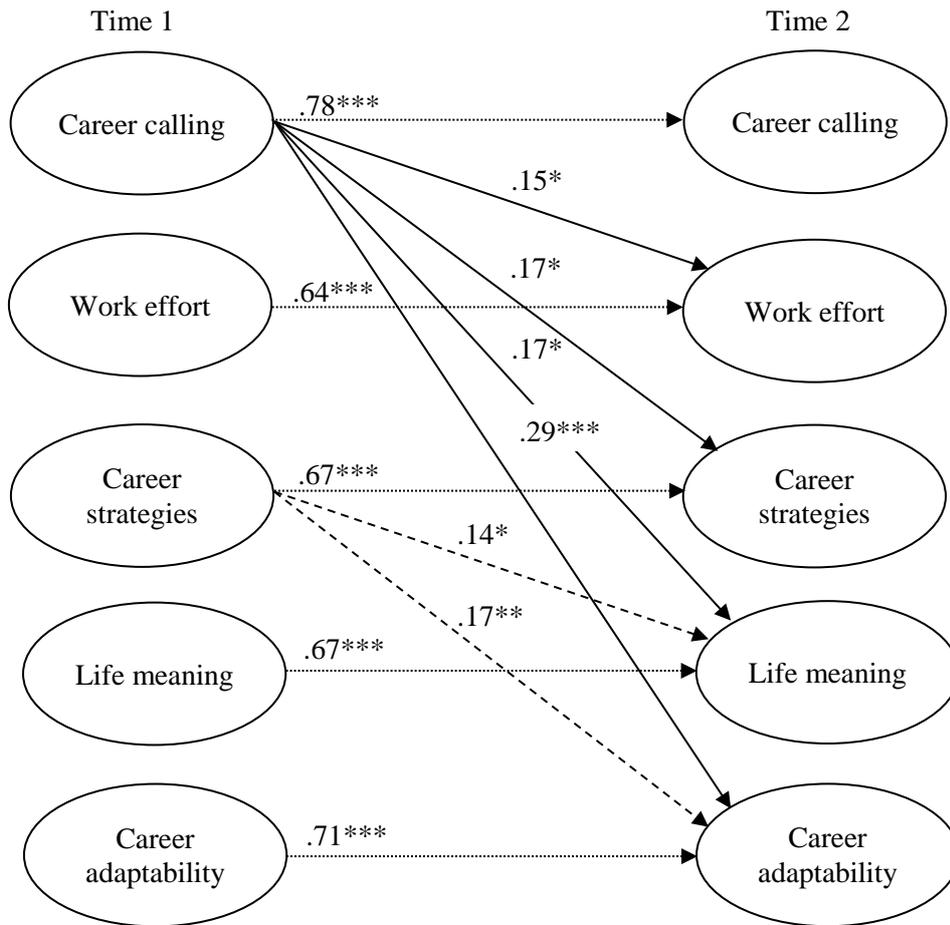


Figure 2. (a) Standard causal structural model: dotted lines indicate autoregressive paths between T1 and T2 variables and solid lines indicate direct relations between career calling at T1 and all other variables at T2. (b) Mediation model: dashed lines indicate significant paths between T1 mediator and T2 outcome variables. Paths from work effort to life meaning and career adaptability were not included as work effort did not meet criteria for mediation. Standardised beta weights are reported.

* $p < .05$; ** $p < .01$; *** $p < .001$.