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Relationships between teacher career stages/states and locus of control: A multilevel analysis[1]

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Abstract
New questionnaire items to assess teachers' career stages were developed, and with a locus of control instrument, administered to a random sample of Australian high school teachers. The career data reinforced the inappropriateness of conceptualising teachers' career stages as linear. Hence, 'career states' was adopted as a more appropriate term. This paper reports multilevel models relating career states with demographic variables and locus of control.

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Super's career stage model (Super, 1957, 1990) has been influential in the vocational literature for over forty years (Aryee, Chay and Chew, 1994; Salomone, 1996; Smart & Peterson, 1997). The Super (1990) model essentially posits four identifiable stages in a worker's career, namely, exploration, establishment, maintenance and disengagement. Although related to sequential life cycle theories (eg., Erikson, 1964), Super and others have emphasised strongly that individuals do not proceed or cycle through the stages in a linear manner. Not only is there considerable inter-individual variation in the timing of the stages, individuals can miss stages, revert to "earlier" stages or remain at a single stage during a career (Aryee et al., 1994; Huberman, 1989; Salomone, 1996; Smart & Peterson, 1997; Super, 1957, 1990). It follows that the term "stage" may not be consistent with recent theoretical conceptualisations, but is now entrenched in the vocabulary of the career concept.

The exploration phase generally occurs early in the career, but may almost be considered pre-career as the individual in this phase may be characterised as a beginner, exploring her individual interests and capabilities, who has not yet committed to the career. In the establishment stage an individual identifies with his career, grows in capability, and there is a degree of stabilization. The maintenance stage is about consolidation rather than growth. The final disengagement stage generally occurs when the individual is concerned with finishing her career and moving on to the next phase of life, typically some form of retirement.

Teachers' career stages

Integrating Super's (1957) model with his own and others' research and writing (eg., Levinson, 1978), Huberman (1989) cautiously argued for a career stage model specifically for teachers' professional work. He proposed career entry, stabilization, diversification and change, stocktaking and interrogations at mid-career, serenity and affective distance, conservatism and disengagement.

Career entry is characterised as a stage when the beginning teacher focuses very much on surviving the early classroom experiences, whilst exploring the new experience of being a real teacher rather than a trainee. At the career entry stage, the neophyte teacher typically does not yet have control over a number of aspects of his work. Stabilization involves a commitment to teaching as a career. As Huberman (1989, p. 350) articulated: "One is now a teacher, both in one's own eyes and in the eyes of others – not necessarily forever, but for a good block of time". In this phase, teachers become more comfortable with their professional self-concepts. They are no longer considered beginners and expectations are now greater. Diversification and change is a stage in which having mastered their classrooms, that is having exerted control over their work within their domain, teachers are inclined to experiment and be more active professionally. The stocktaking and interrogations at mid-career stage has some characteristics of the 'mid-life crisis' that is common to many life and career stage models. This is aptly described by one teacher: "I wondered if I was doomed to die in front of a blackboard with a piece of chalk in my hand" (Huberman, 1989, p. 352). This is a stage in which self-doubts could lead to a sense of lack of control. Serenity and affective distance describes a time when teachers have come to terms with their occupational lot and have considerable control over their work, with an economical expenditure of effort. The 'distance' referred to here is distance from the students. Generally, there is now a clear generation gap between teacher and students. Conservatism is related to convictions that there has been a decline in standards, standards of student behaviour and standards of behaviour of younger teachers, and conservative views of teaching practices. Finally,

disengagement, consistent with other models, describes a period in which teachers begin cognitive and behavioural withdrawal from the work of teaching. It is clear that Huberman's conceptualisation conceptualises Super's (1990) well-established model to the career of teaching, but still remains consistent with the latter. Again, there is an important caveat that the model is not linear.

Importantly for the study reported here, one may argue that Huberman (1989) largely characterized the proposed career stages in terms of teachers' individual behaviours and beliefs, the latter not only about themselves and their work, but about students, other teachers and work environments.

Locus of control

Locus of control has been one of the most studied measures of individual differences (Rotter, 1990). It is an individual's generalized belief (expectancy) about the extent to which personal outcomes are contingent upon her personal characteristics or behaviours, or external factors. Typically, a person with a high internal locus of control has generalized expectancy beliefs about being capable of controlling his personal outcomes. On the other hand, a person with a high external locus of control typically believes that personal outcomes are contingent upon the environment. That is, "…the reinforcement or outcome is a function of chance, luck, or fate, is under the control of powerful others, or is simply unpredictable" (Rotter, 1990, p. 489). A number of writers have been critical of locus of control measures' capacity to genuinely measure a global orientation and argued for more domain specific measures (eg., Bandura 1997, Leone & Burns, 2000; Marshall, 1991). Notwithstanding, the argument that human beings do generalize expectancies from more specific domains does have validity (Marshall 1991; Rotter, 1990).

Rotter's (1990) original conceptualisation of external locus of control was two-dimensional and did not differentiate between chance, luck and powerful others as external explanations of control beyond the individual. Levenson (1981) developed I (Internal), P (powerful others), and C (Chance) scales to address this issue. The separation of powerful others from chance is important conceptually, but also in terms of applicability of the scales to some real world contexts. In particular, the hierarchical structures in many organizations are likely to limit personal control in many instances. Or alternatively, only allow mediated personal control through powerful others (Levenson, 1981). In addition, Levenson's scales are deliberately worded to be specific to the person completing the scales, rather than relating to people generally.

Locus of control has proved to be worthwhile in investigations of organizational phenomena. For example, external locus of control has been found to be associated with lower job satisfaction (Kirkcaldy, Cooper & Furnham, 1999; Kirkcaldy, Shephard & Furnham; 2002; McCormick & Solman, 1992)), and greater work stress (Glazer, Stetz & Izso, 2004; McCormick & Solman, 1992), Moreover, in some organizational contexts, internals have been found to have better mental health outcomes than externals (Hahn, 2000; Kirkcaldy, Cooper & Furnham, 1999). Importantly, relationships between locus of control and demographic variables have consistently been found. For example, Levenson (1981) reported that significant relationships with gender and age have been regularly identified.

Theoretical framework and hypotheses

Locus of control is a relatively stable, but certainly not immutable measure of individuals' generalized expectancies for control, which has been used in studies of life cycle changes (Levenson, 1981). The study reported here is based on the proposition that teachers' locus of control will be related to career stages of teachers. We propose that the relationships are likely to be dynamic and bi-directional. Generalized expectancy beliefs may be expected

to play a role in shaping perceptions and beliefs about work experiences, given the considerable time that most individuals spend in work activities. At the same time, consistent work experiences may be expected to contribute to generalised expectancy beliefs, either by reinforcing or altering pre-existing beliefs.

There is likely to be considerable uncertainty and a lack of understanding of structures and processes within schools for beginning teachers. This lack of understanding could mean that many could interpret their experiences as random occurrences. At the same time, in this early developmental stage, they are likely to be dependent to some degree on others, more expert and with greater personal and organizational authority than them. In a new, relatively unfamiliar environment, they are likely to have a diminished sense of personal control.

Hypothesis 1. Career entry will be positively related to C locus of control.

Hypothesis 2. Career entry will be positively related to P locus of control.

Hypothesis 3. Career entry will be negatively related to I locus of control.

The later career stages are likely to be characterized by teachers having a relatively higher sense of personal control because of increased professional experience, confidence and responsibilities. It follows from the same argument that the later career stages are likely to be negatively associated with C and P loci of control. However, there is likely to be an exception for the stocktaking stage, when self-doubts may be predicted to be related to a lower sense of personal control.

Hypothesis 4. Stabilization, diversification and change, serenity and affective distance, and conservatism and disengagement will be positively related to I locus of control.

Hypothesis 5. Stabilization, diversification and change, serenity and affective distance, and conservatism and disengagement will be negatively related to C locus of control.

Hypothesis 6. Stocktaking will be positively related to C locus of control.

Hypothesis 7. Stocktaking will be negatively related to I locus of control.

Although locus of control and career stages are clearly individual level phenomena, they are conceptually very much related to environmental phenomena. Career stage, in particular, may be predicted to vary according to different work environments of schools. For example, one could reasonably predict that schools that are conservative and not attuned to experimentation and change would generally not be conducive to the diversification and change stage, and more likely to be associated with conservatism and disengagement. In the same vein, ways in which power is distributed and enacted in schools are likely to vary considerably. One school could be organised along the lines of participative decision-making and distributed leadership, whilst another school could be 'ruled' by a small elite. Consequently, one could reasonably expect considerable variation of P locus of control across different schools.

Hypothesis 8. Career stages will vary between schools.

Hypothesis 9. P locus of control will vary between schools.

Finally, a more general research question was posited:

To what extent may teachers' career stages be predicted by gender, age and number of years working as a teacher?

Method

Sample

One high school was randomly selected from each of the 40 public school districts in New South Wales (NSW) Australia. Sufficient numbers of survey questionnaires for approximately half the teachers in each school were sent to coordinators at each school, asking them to randomly distribute the questionnaire to teachers with a letter asking them to participate in the study and a pre-paid return envelope. Only classroom teachers, that is, non-executive teachers, were included. A total of 416 teachers (some cases had missing data) responded, rendering a response rate of approximately 36%. The sample was approximately 43% male and the mean age was 42.5 years (SD = 8.7). The mean number of years working as a teacher was 17.9 years (SD = 9.5).

Instruments

The data reported here were gathered from three sections of the questionnaire. The first section asked respondents to indicate their age, number of years working as a teacher, and gender. The second section consisted of 55 new items developed to represent beliefs and behaviours consistent with Huberman's (1989) qualitative descriptions of teacher career stages. We considered this important as the theoretical framework was based specifically on Huberman's earlier work. Items were preceded by: "The following statements are about your recent, personal experiences, views and opinions. There are no right or wrong answers. Please indicate the extent to which you agree with each statement, at this time, by circling the most appropriate response". Teachers responded to each item on a five point Likert-type scale, ranging from (1) strongly agree to (5) strongly disagree. It is important to note the direction of this scale for future interpretation of results.

Examples of career items are: "I'm still on a sharp learning curve for teaching", which was considered consistent with the entry stage; "I have been feeling more in control of my work" was regarded as representative of the stabilization stage; "At school I'm involved in a wide range of activities" is consistent with conceptualisation of the diversification and change stage; "Sometimes I think I'm wasting my time in this job" was developed for the interrogations at mid-career stage; "I'm becoming less interested in school activities" was considered to reflect an aspect of the serenity and affective distance stage; "These days I'm thinking about retirement" was designed to tap an aspect of disengagement.

Levenson's (1981) instrument was used to measure locus of control. Participants responded to 24 items, on a six point Likert-type scale, designed to tap the three dimensions of locus of control discussed earlier, ranging from strongly disagree to strongly agree. A positive characteristic of the Levenson IPC instrument is that items are matched across the three scales. For example, "When I make plans, I am almost certain to make them work" on the I (internal) scale is matched by "In order to have my plans work, I make sure that they fit in with the desires of people who have power over me" on the P (powerful others) scale, and "It is not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune" on the C (chance) scale. Participants responded on a scale ranging from (1) strongly disagree to (6) strongly agree.

Analysis and discussion

Measurement models

Using Huberman's (1989) classification of career stages, as a starting point, the fifty-five new career stage items, specifically constructed for this study, were refined in a largely exploratory process, but guided by the conceptual framework, to sixteen items constituting a measurement model comprising five career stages, which were named *career entry*, *stabilization*, *stocktaking, conservatism and disengagement*. When the magnitude of the correlation between two factors was greater than 0.5, discriminant validity was checked by testing a competing model with the items of the two factors combined. In each case, the competing model was found to have inferior fit statistics. The final model had acceptable fit statistics and details are shown in Table 1. These stages are consistent with Huberman's (1989) model, however, diversification and change and serenity and affective distance did not emerge as distinct factors with this sample of teachers. Consequently, hypotheses four and five were revised to eliminate these two stages.

Table 1. Career stages measurement model

Career entry
I regularly worry about my adequacy as a teacher
I lose time in class maintaining discipline
Lessons regularly don't turn out as I would like
Stabilization
I feel comfortable trying new teaching ideas
I'm becoming a better classroom teacher
I'm enjoying the challenge of becoming a better teacher
Stock-taking
I wonder why I chose teaching as a job
Sometimes I think I'm wasting my time in this job
Schools aren't good places to work these days
As far as work is concerned, I'm at a crossroads
Conservatism
New teaching ideas are usually a waste of time
I stick to what I know works in the classroom
Young teachers think they know it all these days
Disengagement
I'm becoming less interested in school activities
Retirement is looking attractive to me
I don't engage in many school-wide activities these days

Goodness of fit statistics ($\chi 2$= 254.2; df = 94)
$\chi 2$/df = 2.7; GFI = .92; AGFI = .89; RMSEA = .07;
RMR = .07; NFI = .95; CFI = .97

Career entry is characterised by concern about adequacy as a teacher, discipline problems and lack of control of outcomes in the classroom, in brief, a lack of mastery. The stabilization stage is when the teacher is still learning his profession, but the experience is enjoyable and comfortable, and there is a sense of improvement and professional growth. This is a clearly positive stage in terms of professional development. In the stocktaking stage,

teachers question their choice of career and whether they should persist in teaching. Teachers in the conservatism stage are not generally open to new ideas and rely on established methods. Disengagement is about withdrawing from school activities and preparing for retirement. So, whilst not all hypothesised stages emerged from the data, five clearly meaningful factors, consistent with the theoretical framework, were identified.

The final locus of control measurement model, consisting of ten items is shown in Table 2. Although the structure of Levenson's (1981) scales was not exactly replicated, this measurement model with fewer items and reasonable fit statistics is entirely consistent with the three dimensions of the original instrument.

Intercorrelations

Following development of the measurement models, latent variable scores were generated. This relatively new form of factor score differs from the older regression factor score in that it incorporates estimates of measurement error (Joreskog, Sorbom, du Toit and du Toit, 1999).

Correlations between the career stage and locus of control variables are shown in Table 3. Stabilization may broadly be described as a positive stage in terms of attachment to work, and is negatively correlated with the other stages. This makes sense, but does not suggest that these latter stages were necessarily negative for these teachers in terms of their well-being. As expected, I locus of control is negatively correlated with C locus of control and P locus of control.

Table 2. Locus of control measurement model

Internal (I)
I can pretty much determine what will happen in my life
When I get what I want, it is usually because I worked hard for it
My life is determined by my own actions
External chance (C)
To a great extent my life is controlled by accidental happenings
Often there is no chance of protecting my personal interest from bad luck happenings
When I get what I want, it is usually because I'm lucky
It is not always wise for me to plan too far ahead because many things turnout to be a matter of good or bad fortune
External powerful others (P)
I feel like what happens in my life is mostly determined by powerful people
Although I might have good ability, I will not be give leadership responsibility without appealing to those in positions of power
People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups

Goodness of fit statistics ($\chi 2$=60.0; df =32)
$\chi 2$/df = 1.9; GFI = .97; AGFI = .95; RMSEA = .05;
RMR =.12 ; NFI =.95 ; CFI =.98

Noting the opposite directions of the career stage and locus of control scales, career entry is negatively associated with I locus of control and positively associated with C and P

loci of control. Hence, hypotheses one, two and three are supported. Conservatism and disengagement are negatively associated with I locus of control and positively associated with C locus of control, meaning hypotheses four and five are not supported. These are potentially important results as they suggest that some teachers who may be identified as being 'set in their ways" may actually have limited confidence to exert control beyond a relatively narrow set of behaviours. Similarly, disengagement for some teachers may reflect conceding control, particularly to powerful others. Stocktaking is positively associated with C locus of control and negatively associated with I locus of control, so hypotheses six and seven are supported.

Table 3. Intercorrelations ($p<.05$) with Cronbach alpha reliabilities on the diagonal

	1	2	3	4	5	6	7	8
1. career entry	**.54**							
2. stabilization	-.36	**.69**						
3. stocktaking	.67	-.69	**.78**					
4.conservatism	.26	-.80	.60	**.50**				
5.disengagement	.39	-.77	.83	.68	**.64**			
6. I	.23	-.19	.27	.22	.21	**.68**		
7. C	-.15	.23	-.28	-.41	-.17	-.50	**.65**	
8. P	-.47	.34	-.53	-.45	-.44	-.47	.66	**.55**

Two level variance decomposition model

The data were deliberately sampled to reflect the nested, hierarchical nature of teachers located within schools, and to test hypotheses 8 and 9. Hence multilevel models were developed. First, fully unconditional decomposition models were estimated to identify proportions of variance of the career stage and locus of control variables at the teacher and school levels, and are summarized in Table 4.

Stabilization, stocktaking and disengagement varied significantly at the school level, supporting hypothesis 8. However, it should be noted that the effect sizes are quite small with variance (intraclass correlations) only ranging from 8% to 12%. The career stage phenomenon, as represented by these data, is overwhelmingly an individual level phenomenon. Table 4 also shows that hypothesis 9 is supported, albeit, again with a small effect size (8%).

Multilevel regression models

A series of multilevel models with career stages as dependent variables, and demographic variables and locus of control variables as independent variables was developed, starting from the unconditional model. First, the demographic variables were entered in the order gender, years of teaching, age. Then, the locus of control variables were entered in the order, internal, chance, powerful others At each step standard errors and the log-likelihood statistic (-2lnL) were checked to ensure parameter estimates were significant and model fit improved by the addition of a variable to the model. If these criteria were not met, the variable was removed from the model. The models are shown in Tables 5 to 9.

Table 4. Fully unconditional variance decomposition models

Variable	School level variance (SE)	Teacher level variance (SE)
Career entry		.867 (.067) **.86**
Stabilization	.086 (.042) **.09**	.911 (.070) **.91**
Stock-taking	.093 (.044) **.09**	.908 (.070) **.91**
Conservatism	-	.934 (.072)
Disengagement	.117 (.049) **.12**	.885 (.068) **.88**
I locus of control	-	.923 (.071)
C locus of control	-	.957 (.074)
P locus of control	.081 (.041) **.08**	.923 (.071) **.92**

NB. All estimates shown significant at the .05 level;
no statistically significant estimates of school intercepts; intraclass correlations in bold.

Table 5. IGLS multilevel model solutions showing variation in 373 teachers' career entry scores in 40 schools (fitted estimates)

Explanatory Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Final Model
Fixed:								
Constant ($\beta_{0j}X_0$):	.014	.014	.014	.013	.014	.015	.021	.021
Teacher Level Demographics								
X_1 *age*		-.004						
X_2 *gender*			-.012					
X_3 *years teaching*				-.134				
Teacher Level Locus of control								
X_4 *I Locus of control*					**.212**	**.197**	.003	
X_5 *C Locus of control*						-.030		
X_6 *P Locus of control*							**-.441**	**-.452**
Random:								
σ^2_{0u} (School-level)	.141	.141	.141	.130	.125	.123	.096	.096
σ^2_e (Teacher-level)	**.867**	**.867**	**.867**	**.854**	**.831**	**.831**	**.692**	**.692**
% of Variance Explained	0	0	0	1.6	4.4	4.4	21.2	21.2
-2 (Log-Likelihood)	1040.32	1040.31	1040.27	1033.32	1022.69	1022.41	949.94	952.47

NB. Variables statistically significant at the 0.05 level in bold

Table 6. IGLS multilevel model solutions showing variation in 373 teachers' stabilization scores in 40 schools (fitted estimates)

Explanatory Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Final Model**
Fixed:								
Constant ($\beta_{0j}X_0$):	-.022	-.017	-.016	-.013	-.013	-.015	-.014	-.014
Teacher Level Demographics								
X_1 *age*		**.246**	-.036					
X_2 *gender*			**.342**	**.266**	**.261**	**.274**	**.248**	**.239**
X_3 *years teaching*				**.265**	**.253**	**.242**	**.230**	**.231**
Teacher Level Locus of control								
X_4 *I Locus of control*					**-.161**	-.075		
X_5 *C Locus of control*						**.171**	.068	
X_6 *P Locus of control*							**.215**	**.261**
Random:								
σ^2_{0u} (School-level)	**.086**	.063	.056	.034	.033	.029	.026	.025
σ^2_e (Teacher-level)	**.911**	**.865**	**.834**	**.783**	**.759**	**.740**	**.722**	**.725**
% of Variance Explained		6.9	10.7	18.1	20.6	22.9	25.0	24.8
-2 (Log-Likelihood)	1047.74	1024.42	1009.49	980.50	968.80	958.51	948.31	949.59

NB. Variables statistically significant at the 0.05 level in bold

Table 5 shows the multilevel regression model for *career entry*. This model informs the research question and addresses hypotheses one, two and three. There is no statistically significant demographic variable in this model, suggesting little variation in terms of gender, age and years as a teacher. It is surprising that years of teaching does not predict the career entry stage; logically; one would expect inexperienced novices to score more highly on this variable. One may speculate that some teachers in this sample with differing lengths of service may have been stalled at, or reverted to the career entry stage, and the important caveat that stages should not be conceptualised as rigid and linear (Huberman, 1989; Super, 1990) is reinforced. As noted earlier, hypotheses one, two and three are supported. However, the multilevel model clearly suggests that P locus of control is the best predictor of the entry stage. That is, generally, teachers in this stage have a generalised expectancy that their life is controlled by powerful others. Arguably, most novice teachers are likely to be highly dependent on school supervisors.

Table 6 shows the multilevel regression model for stabilization. Addressing the research question, the stabilization stage is predicted by gender and years of teaching. Females were more likely to be in this stage than males. One possible explanation for this is that the ratio of female to male teachers in NSW is approximately 2:1 and there is evidence that in recent years teaching has been perceived generally by some males as a relatively less attractive, feminised occupation (Ramsey, 2000). It also follows that female teachers could be expected to more readily commit to the profession. The other significant demographic variable in the model suggests that teachers were more likely to be in this stage the earlier they were in their careers, and vice versa, which is consistent with the theoretical

conceptualisation. In contrast to the career entry regression model, stabilization was negatively associated with P locus of control, which was the strongest predictor. This suggests a phase when teachers are less dependent on others to practise their profession.

Table 7 shows the multilevel regression model for stocktaking. In this stage, teachers are more likely to view their jobs negatively and question whether they should have chosen their career, or indeed, whether they should change careers. As one would predict, the multilevel regression model shows that the more experienced these teachers were, the more likely they were to be in this stage, and vice versa. P locus of control is the strongest predictor, which is consistent with the notion of questioning one's capabilities.

Table 7. IGLS multilevel model solutions showing variation in 373 teachers' stocktaking scores in 40 schools (fitted estimates)

Explanatory Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Final Model**
Fixed:								
Constant ($\beta_{0j}X_0$):	.004	.002	.001	.001	.002	.005	.006	.009
Teacher Level Demographics								
X_1 *age*		**-.152**	.083					
X_2 *gender*			**-.284**	**-.177**	**-.167**	**-.179**	-.105	
X_3 *years teaching*				**-.217**	**-.199**	**-.189**	**-.154**	**-.174**
Teacher Level Locus of control								
X_4 *I Locus of control*					**.251**	**.169**	.072	
X_5 *C Locus of control*						**-.164**	.149	
X_6 *P Locus of control*							**-.557**	**-.504**
Random:								
σ^2_{0u} (School-level)	.093	.087	.081	.065	.052	.047	.043	.046
σ^2_e (Teacher-level)	**.908**	**.889**	**.868**	**.835**	**.782**	**.765**	**.610**	**.634**
% of Variance Explained		2.4	5.1	10.0	16.6	18.8	34.7	32.0
-2 (Log-Likelihood)	1048.117	1039.34	1029.42	1012.02	985.34	976.29	893.62	908.67

NB. Variables statistically significant at the 0.05 level in bold

Table 8 shows the multilevel regression model with conservatism as the dependent variable. Again the demographic variables, gender and teacher experience are significant predictors. Males were more likely to be in this stage than females. There appears to be no coherent theoretical explanation for this result and it should be further investigated. As would be predicted, the greater the number of years of teaching, the more likely the teacher was to be in the conservatism stage, and vice versa. C and P loci of control are positively related to conservatism, partially supporting hypothesis 5.

Table 9 shows the multilevel regression model for disengagement as a dependent variable. Again, there is a significant gender effect with males more likely to score highly on the measure of this stage. This is consistent with the gender effect identified in the conservatism model. Years of teaching is a significant predictor in the model, and suggests

that the greater the number of years teaching, the greater the likelihood that these teachers would be in the disengagement stage. P locus of control is the strongest significant predictor and is positively associated with disengagement. This is consistent with the trend in conservatism.

Table 8. IGLS multilevel model solutions showing variation in 373 teachers' conservatism scores in 40 schools (fitted estimates)

Explanatory Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Final Model
Fixed:							
Constant ($\beta_{0j}X_0$):	-.001	-.002	-.003	.000	.000	.002	.002
Teacher Level Demographics							
X_1 *age*		**-.207**	.055				
X_2 *gender*			**-.315**	**-.217**	**-.212**	**-.240**	**-.210**
X_3 *years teaching*				**-.313**	**-.298**	**-.273**	**-.259**
Teacher Level Locus of control							
X_4 *I Locus of control*					**.191**	-.007	
X_5 *C Locus of control*						**-.394**	**-.249**
X_6 *P Locus of control*							**-.214**
Random:							
σ^2_{0u} (School-level)	.065	.044	.046	.011	.009	.002	.000
σ^2_e (Teacher-level)	**.934**	**.906**	**.874**	**.812**	**.778**	**.671**	**.649**
% of Variance Explained		4.9	7.9	17.6	21.2	32.6	35.0
-2 (Log-Likelihood)	1052.20	1036.16	1023.94	985.54	968.97	910.86	897.26

NB. Variables statistically significant at the 0.05 level in bold

Conclusions

The study reported here investigated relationships between teachers' career stages and locus of control measures with a sample of Australian teachers in 40 randomly selected high schools. Measurement models consistent with career stage theory (Huberman, 1989; Super, 1990) and locus of control theory (Levenson, 1981) demonstrated the required structure of the data. However, the theoretical career stages diversification and change and serenity and affective distance did not emerge as distinct stages, possibly reflecting the work experiences of these teachers. Subsequently, latent variable scores were generated and used in multilevel regression analyses.

The hypotheses that career stages and powerful other locus of control scores would vary between schools were supported, albeit with small effect sizes. Analyses also provided evidence that gender and number of years experience as a teacher were predictors of some career stages.

Table 9. IGLS multilevel model solutions showing variation in 373 teachers' disengagement scores in 40 schools (fitted estimates)

Explanatory Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Final Model
Fixed:							
Constant ($\beta_{0j}X_0$):	.017	.013	.012	.010	.010	.011	.015
Teacher Level Demographics							
X_1 *age*		**-.284**	.016				
X_2 *gender*			**-.363**	**-.308**	**-.302**	**-.308**	**-.267**
X_3 *years teaching*				**-.250**	**-.237**	**-.232**	**-.201**
Teacher Level Locus of control							
X_4 *I Locus of control*					**.174**	.134	
X_5 *C Locus of control*						-.081	
X_6 *P Locus of control*							**-.372**
Random:							
σ^2_{0u} (School-level)	.117	.074	.069	.047	.042	.041	.042
σ^2_e (Teacher-level)	**.885**	**.830**	**.792**	**.747**	**.721**	**.717**	**.621**
% of Variance Explained		9.6	13.8	20.6	23.7	24.2	33.7
-2 (Log-Likelihood)	1043.49	1012.01	994.43	967.55	953.26	950.85	899.62

NB. Variables statistically significant at the 0.05 level in bold

These results have significance for schools and educational bureaucracies. It seems reasonable to suggest that the lack of a relationship between career entry and years of teaching is a matter of concern. Ideally, a teacher would be in this stage for the first few years of teaching and progress to the stabilization stage. Arguably, for teachers to be in this stage after working for several years is likely to have negative consequences for the teachers, their students and the schools. The paradox may be that provision of support to the latter may be counterproductive. These results suggest that a more appropriate approach may be to engender greater internal locus of control rather than dependence on powerful others, perhaps reinforcing personal authority and responsibilities.

From both organizational and individual perspectives, stabilization is likely to be the most positive of the career stages investigated in this study. Hence, it would be desirable for teachers to move to this growth phase as quickly as possible and to continue to grow for as long as possible, preferably maintaining this until retirement. This stage is consistent with nurturing a sense of teacher professionalism.

Stocktaking is not by definition negative. Indeed, if teachers are in this stage, then perhaps what are important are the period of time through which the stage extends, and the stage that follows. For example, one teacher could spend a short time taking stock, whilst another spends years. Another might return to the professional growth characterised by stabilization, whilst another could move to conservatism or disengagement.

Whilst it may seem "natural'" for teachers to become more conservative in their teaching over time, this stage may not be desirable if it is associated with a diminished expectancy of

personal control. Although one can not infer causal directions with these analyses, it is worth noting that there is a difference between continuing to employ the same classroom practices because they are perceived to be efficacious, and doing so because of a perceived lack of personal agency.

Perhaps the most important outcome from this study is the possibility that school environments may make some contribution to teachers' locus of control and career stage. These results suggest that schools and school systems should deliberately engender work environments that nurture teachers' sense that they are in control of what happens. These environments are likely to be more effective for schools and the teachers who work in them.

REFERENCES

Aryee, S., Chay, Y. W. & Chew, J. (1994). An investigation of the predictors and outcomes of career commitment in three stages. *Journal of Vocational Behavior*, *44*, 1-16.

Erikson, E. H. (1964). *Childhood and Society (2nd ed.)*. New York: Norton.

Glazer, S., Stetz, T. A. & Izso, L. (2004). Effects of personality on subjective job stress: a cultural analysis. *Personality and Individual Differences*, 37, 645-658.

Hahn, S. E. (2000). The effects of locus of control on daily exposure, coping and reactivity to work interpersonal stressors: a diary study. *Personality and Individual Differences, 29*, 729-748.

Huberman, M. (1989). On teachers' careers: Once over lightly with a broad brush. *International Journal of Educational Research*, *13*, 347-361.

Joreskog, K.,, Sorbom, D., du Toit, S. & du Toit, M. (1999). *LISREL 8: New Statistical Features*. Chicago IL: Scientific Software International.

Kirkcaldy, B. D., Cooper, C. L. & Furnham, A. F. (1999). The relationship between type A, internality-externality, emotional distress and perceived health. *Personality and Individual Differences, 26*, 223-235.

Kirkcaldy, B. D., Shephard, R. J. & Furnham, A. F. (2002). The influence of type A behaviour and locus of control upon job satisfaction and occupational health. *Personality and Individual Differences, 33*, 1361-1371.

Levenson, H. (1981). Differentiating among internality, powerful others, and chance. In H. M. Lefcourt (Ed.). *Research With the Locus of Control Construct*. New York: Academic Press.

Levinson, D. J. (1978). *The Seasons of a Man's Life*. New York: Knopf.

McCormick, J. & Solman, R. (1992). Teachers' attributions of responsibility for occupational stress and satisfaction: an organizational perspective. *Educational Studies, 18*, 201-221.

Ramsey, G. (2000). *Quality Matters*. Sydney: NSW Department of Education and Training.

Rotter, J. B. (1990). Internal versus external control of reinforcement: A case history of a variable. *American Psychologist, 45*, 489-493.

Salomone, P. R. (1996). Tracing Super's theory of vocational development: A 40-year retrospective. *Journal of Career Development, 44*, 1-16.

Smart, R. & Peterson, C. (1997). Super's career stages and the decision to change careers. *Journal of Vocational Behavior, 51*, 358-374.

Super, D. E. (1957). *The Psychology of Careers*. New York: Harper.

Super, D. E. (1990). A life-span, life-space approach to career development. In D. Brown and L. Brooks (Eds.). *Career Choice and Development: Applying contemporary theories to practice (2nd ed.)*. San Francisco CA: Jossey-Bass, pp. 197-261.