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Measurement Approach to the Comparisons of Career Anchor Models

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Doctor of Philosophy

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ABSTRACT

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The career anchors concept is an approach to understanding career orientation and motivation. The original career anchor model was introduced by Schein in 1974. Several investigators have created revisions of the model to make it more useful. This dissertation is a continuation of the quest to evaluate the original model and the revised models with respect to empirical support.

This study is the first of two studies in which measurement methods are devised to solve the psychometric problems of previous measures. In this study we create and test an "economic exchange" model to correct the problem of acquiescent bias. We test five career anchor models and this new scaling method against two sets of data. The first consists of data from 330 participants we collect in the present study, and the other is a set of correlation matrices from Barclay's dissertation meta-analysis of six previous studies from the literature.

We find that the economic exchange method creates greater variances in the ratings (both within each person and across persons) as predicted, but the hypothesis of predicted increase in the range of correlation coefficients for this method is not supported. In its present form the economic exchange method is not found to be superior to the standard Likert scale method. In addition, the oppositionality of career anchor choices does not increase for older respondents as expected.

From a confirmatory factor analysis test of goodness of fit of the five models against the six datasets of this dissertation and the six studies from Barclay's meta-analysis, we find no evidence for one best career anchors model. That is, the five competing theoretical models seem to each be "best" in some situations or populations.

Keywords: career anchor, measurement methods, model fit, age differences

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I dedicate this dissertation to my father Chuanqi Cai, my mother Ling Zhao and my husband Feng Zhang. I will love you throughout my whole life.

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Measurement Approach to the Comparisons of Career Anchor Models

"Career" is a word which could be understood in many ways. Sometimes it applies to a specific profession someone has, and sometimes it stands for a well-structured occupational life (Schein, 2006). General career theory discusses "career" in two basic dimensions: external career and internal career. External career is a person's work life being viewed by others, which is the normal way we understand career in our daily lives (Schein, 2006). This is an objective way to look at careers (Bailyn, 1989), and some related topics are career paths and stages, nature of different occupations and so on (Derr & Laurent, 1989). However, the concept of internal career represents people's perceptions of careers and the psychological nature of various careers, which is the subjective meaning people give to their occupations (Bailyn, 1989). Some related topics within internal career are career orientation, career motivation, and self-development in one's occupation (Derr & Laurent, 1989).

Career Anchor Theory by Schein

Career anchor theory, which was proposed by Schein in 1974, is one of the research topics within the internal career concept since it examines career orientation and motivation. It has been argued that Schein's career anchor theory not only gives individuals much insight into their own career decisions and development, but also help employers and human relations departments understand their employees' real motivations (Barth, 1993).

According to Schein, a "career anchor" is a combination of a person's competencies, motives, and values relating to professional work choices (Schein, 2006). A career anchor is defined as "that one element in our self-concept that we will not give

up, even if forced to make a difficult choice" (Schein, 1987). These elements proceed from stable needs and values which are related to a person's work life (Schein, 1987), which needs come from people's personal psychological traits and influence their career choices and decisions. Prior research shows that a better "fit" between individuals' career anchors and work environment can significantly benefit organizational outcomes, such as work quantity and quality, job satisfaction, commitment to the organization, and job stability (Schein, 1978; Feldman & Bolino, 1996; Ellison & Schreuder, 2000; Summer, Yage, & Franke, 2005).

As part of Schein's career anchor theory, eight career anchors are identified: Technical/Functional Competence (TF), General Managerial Competence (GM), Autonomy/Independence (AU), Security/Stability (SE), Entrepreneurial/Creativity (EC), Service/Dedication to a Cause (SV), Pure Challenge (CH), and Lifestyle (LS) (Schein, 1990b). The Technical/Functional Competence anchor is a strong need for specialization in one's area of expertise (Schein, 2006). When people are strong on this anchor, they are especially motivated by those jobs which could show their unique talents and skills. The General Managerial Competence anchor is a desire of advancement to more responsibility or higher leadership (Schein, 2006). People with this anchor assess the attractiveness of a position based on its importance to the success of the organization (Schein, 2006). The Autonomy/Independence anchor is characterized by a need to do things in one's own way (Schein, 2006). People with this anchor are most motivated by jobs which let them set their own standard and pace. The Security/Stability anchor represents the need for psychological safety and professional security in one's work (Schein, 2006). Everyone needs feelings of security, but people with this anchor view

predictable events and stable progress as predominant in their careers (Schein, 2006). The Entrepreneurial Creativity anchor is a need and desire to create new ventures by building new organizations or reshaping existing businesses (Schein, 2006). This anchor is distinguished from the others because it is not just leadership, but the creating of a new venture that is viewed by people who have this anchor as being essential to their self-fulfillment (Schein, 2006). The Sense of Service anchor is a strong motivation to serve others and a desire to improve the world (Schein, 2006). People who love to work in teaching, nursing, and social work usually have this anchor. The Pure Challenge anchor is a need to conquer everything to prove one's success. People with this anchor receive job satisfaction by completing impossible tasks and solving unsolvable problems (Schein, 2006). The Lifestyle anchor represents a desire to balance one's work and life. People with this anchor are motivated by having a career that conforms to other aspects of life, and they would focus on the design of their total life path rather than only their work (Bailyn, 1989).

Mutually Inconsistent Pairs Structure of Career Anchors by Schein

According to Schein's definition of career anchor, it's "the one thing a person would not give up if forced to make a choice" (Schein, 2006, p. 35). This definition indicates that only one anchor, one pattern of motives, values, and talents, could be at the top of one's career orientation hierarchy (Schein, 2006).

Regarding the relationships of the eight anchors in his theory, Schein proposed that six of them can be viewed as dichotomies between oppositional pairs (Schein, 1990a), as shown in Figure 1. These three pairs of anchors are Technical/Functional vs. General Managerial, Autonomy/Independence vs. Security/Stability, and Service/Dedication vs.

Entrepreneurial/Creativity. Even though he did not mention it, the remaining two, Pure Challenge and Lifestyle, could also be seen as somewhat oppositional (Chapman, 2009). The proposal is that the two in each pair are mutually inconsistent with one other, which indicates that a person cannot hold to both anchors at the same time.

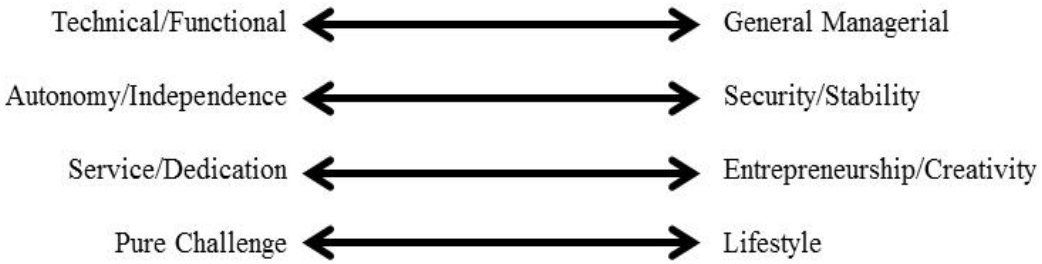


Figure 1. Schein's proposed structure of mutually inconsistent pairs, characterized by dichotomous relationships.

Are there any other career anchors besides these existing eight identified by Schein? According to the literature, so far, no. Research to date argues that most people's career anchor preferences could be described by these eight anchors (Schein, 2006). However, there probably will be more anchors in the future, because additional anchor categories could be added as long as two or more cases do not fit in the existing eight categories and do not resemble the others on several dimensions (Schein, 2006).

Octagonal Model of Career Anchors by Feldman and Bolino

In their review of Schein's career anchor theory and model, Feldman and Bolino (1996) credit Schein with four unique concepts: 1) Schein argues that people's career identities develop through experiences over time; 2) He maintains that people choose a career path within a specific occupation rather than choosing an occupation (Chapman,

2009); 3) He holds that the differences between career paths within the same vocation could be as great as differences across vocational fields (Barclay, 2009). People with the same career anchor preferences could be similar even when they work in different industries (DeLong, 1982); 4) Schein proposes that career anchors could be used to predict career choices. Feldman and Bolino's main criticism of Schein's career anchor theory is that it has not been tested empirically (1996). However, it should be noted that they also did not provide any empirical evidence for their propositions (Chapman, 2009).

Feldman and Bolino argue for the possibility of individuals having both primary and secondary career anchors, which is in response to Schein's proposition that each person has only one career anchor. In later research, Ramakrishna and Potosky (2003) find that nearly half of the participants in their study have more than one anchor. Ituma and Simpson (2007), and Quesenberry and Trauth (2007) also find evidence of multiple career anchors in many people. Given that many persons have multiple career anchors it seems reasonable to ask if some are complementary to one another and some are mutually exclusive.

Feldman and Bolino (1996) propose that the characteristics of some anchors could make them complementary. Specifically, they predict that three anchors: Service, Security and Lifestyles are complementary. They also propose that the characteristics of some anchors could also make them exclusive to one another. For example, two pairs of anchors which would be expected to be mutually exclusive are Pure Challenge vs. Lifestyle, and Entrepreneurial/Creativity vs. Security. On the basis of their proposed pattern of mutual exclusivity relations and similarity relations among the career anchors, they create an octagonal model of the structure of the eight career anchors, as shown in

Figure 2, which they refer to as a "possible factor structure underlying career anchors." There is some empirical evidence for mutual exclusivity and complementarity among career anchors. Quesenberry and Trauth (2007), for example, find that Technical/Functional Competence has a mutually exclusive relationship with General Managerial Competence, and that Technical/Functional Competence, Pure Challenge and Autonomy/Independence are usually clustered together.

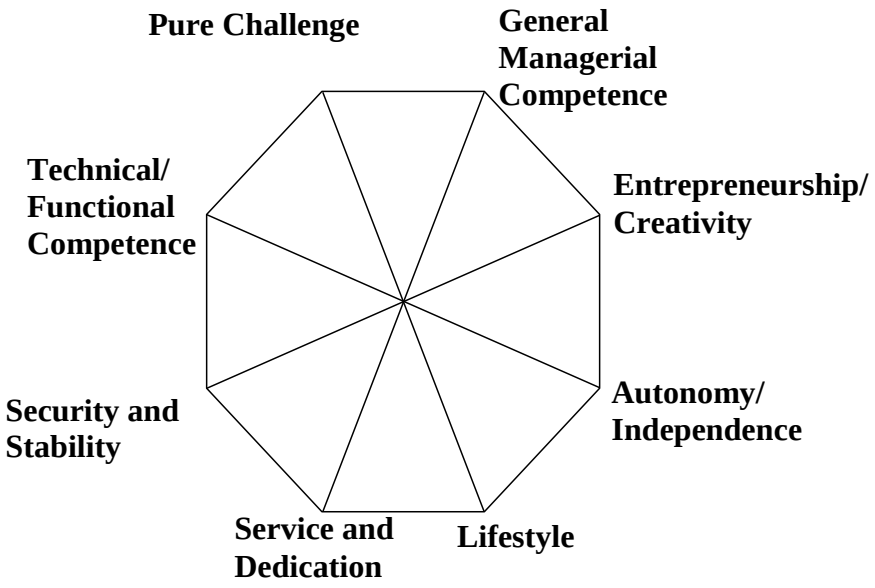


Figure 2. Octagonal model of career anchors as proposed by Feldman and Bolino (1996) in their Figure 3, entitled "Possible factor structure underlying career anchors."

Feldman and Bolino's (1996) proposal that the octagonal model could be considered a possible factor structure underlying career anchors, and the existence of competing alternative models, suggests the possibility of evaluating and comparing the fit

of competing models to the results of empirical studies of career anchors, which is the foundation of Barclay's (2009) dissertation.

Octagonal Model of Career Anchors by Bristow

Based on his experience and research, Bristow (2004) proposes an alternative octagonal factor structure model of career anchors that contrasts with the octagonal structure of Feldman and Bolino (1996). His alternative model is shown in Figure 3. It is similar to the Feldman and Bolino model, but differs in terms of which career anchors are seen as mutually exclusive to one another and which are seen as complementary. Bristow proposes, for example, that Entrepreneurship/Creativity, Autonomy and Pure Challenge share a complementary relationship. He also proposes that Entrepreneurship/Creativity is mutually inconsistent with Technical/Functional, and Autonomy/Independence is mutually inconsistent with Security/Stability.

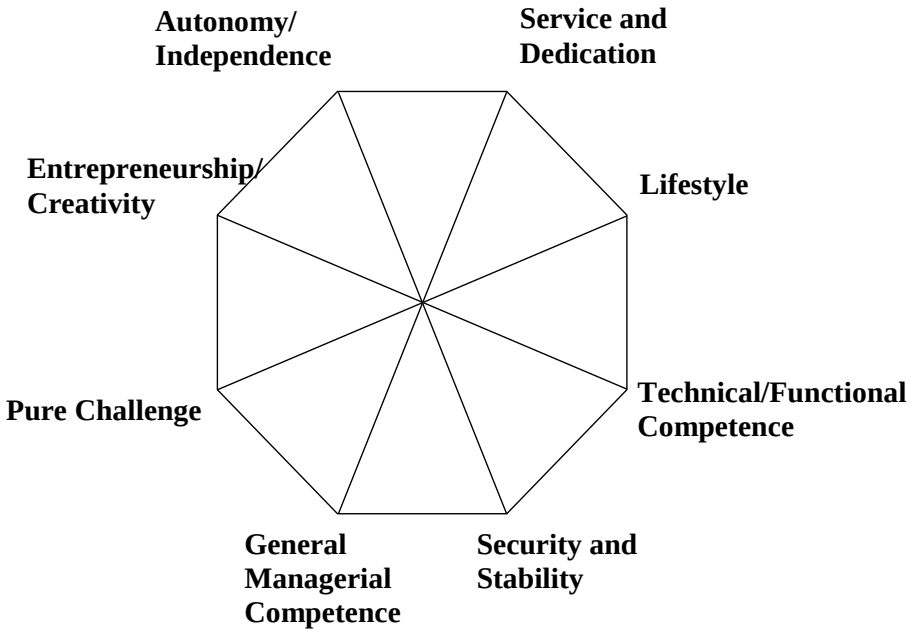


Figure 3. Bristow's proposed octagonal factor structure of career anchors

Octagonal Model of Career Anchors by Chapman

A fourth competing octagonal model of career anchors is proposed by Chapman (2009) on the basis of his empirical data from 1361 participants in a series of career development workshops. Chapman identifies several problem areas in the study of career anchors. One of the problems in measuring career anchors is that people have a tendency to endorse many of them even though some may be much more important to them than others. To correct this, Chapman's subjects are given paired statements of career anchors from which they are to choose one or the other.

In Chapman's career anchor model three anchors, Pure Challenge, Entrepreneurial/Creativity, and Technical/Functional, have a complementary relationship to one another. In addition, Pure Challenge and Security/Stability are mutually exclusive (see Figure 4). Chapman also makes a revision of Schein's career anchor model by adding a forth pair to the original three pairs of anchors (see Figure 1). This means, the eight career anchors consist of four mutually exclusively dichotomies: Technical/Functional vs. General Managerial, Security/Stability vs. Autonomy/Independence, Entrepreneurial/Creativity vs. Service/Dedication, and Pure Challenge vs. Lifestyle.

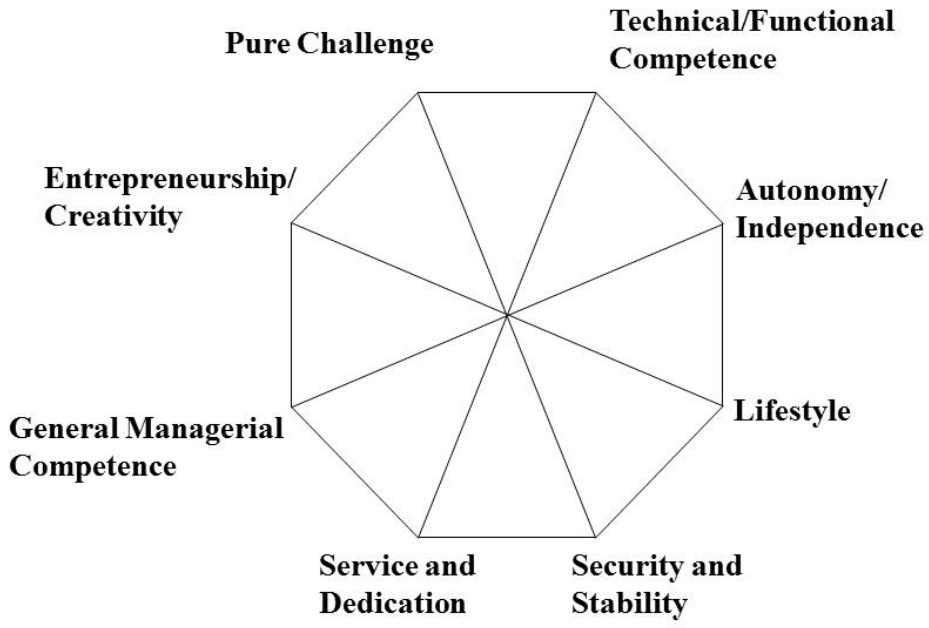


Figure 4. Chapman's proposed octagonal factor structure of career anchors.

Age Progression in Career Anchor Structure

Young people usually have a number of hopes, fears, ambitions and illusions when they first enter the workforce, and are not very clear about their own abilities and motives at this time (Schein, 2006). As a result, the early years of one's occupation are a crucial time of learning (Schein, 2006). Through learning and testing, people know themselves better and gradually abandon their illusions and misunderstandings. As people accumulate enough work experience and have the chance to make choices within their careers, they will begin to assess their choices and will make decisions based on the needs they really find important (Schein, 2006). These dominant needs and desires constitute the career anchors that will characterize a person's work life. As a result, we could expect that people will become more aware of their career anchors when they have developed clear self-images and have gained more real experience (Schein, 2006). This

is why some people make a dramatic change of career in midlife. All of Schein's reasoning here makes sense, but it is mostly hypothetical. We do not have stable longitude evidence to understand how career anchors develop and how they evolve over the course of one's life (Schein, 2006).

Methodology in Career Anchor Theory

Various methods have been used to examine career orientations theory since it was proposed in 1974 by Schein. Initially Schein discovered career anchors when he observed data from a 14-year longitudinal study of organizational socialization. In 1980, he developed a self-evaluation form of an inventory to explore career anchors (Schein, 1980). Then DeLong and Schein developed the "official" Career Anchor Inventory (COI) which consists of 40 questions addressing eight anchors (DeLong, 1982), using a Likert-scale format. This inventory has been used in nearly all career anchor studies so far.

A variation of the COI which uses forced-choice paired comparison questions rather than Likert-scale questions is commonly used in career counseling (Chapman, 2009). This forced-choice method uses 28 comparison questions which include all possible combinations of pairs of the eight career anchors. The forced-choice method is intended to reduce response bias in Likert scales. Four types of bias are in need of correction: 1) motivational distortion, which means respondents giving misinformation purposely; 2) acquiescence bias, which is the tendency of respondents to agree with all the questions; 3) social desirability bias, which is respondents' tendency to answer questions according to social expectations; and 4) central tendency bias, which stands for respondents' avoidance of extreme answers (Baron, 1996). The forced-choice method

is intended to correct these sources of bias and also to make results easier to interpret. It seems that results from 28 forced-choice questions could potentially give more accurate information than results from the 40-Likert-scale questions of COI.

However, there are also concerns about the forced-choice method. In each question, one anchor is preferred and the other one must be unpreferred, which means that for one anchor to have higher counts of preference, some other anchors must necessarily have lower counts (Chapman, 2009). It is well known that paired comparisons of this kind produce ipsative data (Baron, 1996), which means that individuals' preference scores for the eight anchors will always sum to the same value (28 in this case). It has been argued that factor analysis of correlation matrices cannot be appropriately performed on ipsative data (Baron, 1996; Bartram, 1996). As a result, the magnitude of preference counts conveys no information except the order, which means that this method is less useful when comparing individuals to one another (Baron, 1996), but it is especially inadequate when it comes to evaluating the various structural theories of career anchors. That is, ipsative data bars us from using exploratory factor analysis and confirmatory factor analysis, perhaps the most powerful of methods for evaluating structural theories.

In a recent dissertation, Barclay (2009) tested the fit of four models of career-anchor structure against data from seven career anchor studies using structural equations modeling. None of the competing models provided a good fit to the career anchors data, but in Barclay's estimation it was for psychometric reasons. That is, when respondents don't have to choose between career anchors, all of them receive a fairly high rating, which reduces the variation in comparative structure. Chapman's (2009)

forced choice method in his dissertation corrects this problem but introduces the problem of ipsative data structure which precludes structural equation analysis. One of the purposes of this study is to devise a measurement method that solves both problems in order to effectively test the five competing models against empirical data. Another purpose is to test Schein's longitudinally hypothesis by examining career anchor structure at various stages of career development. A third purpose is to broaden the career anchor literature by examining gender differences with respect to model fit.

Gender Difference in Career Choices

Gender has been studied extensively in organizational psychology, especially in the area of the relationship between types of occupations and traits within various organizations (Narayanan, Menon, & Spector, 1999; Levy, Sadovsky, & Troseth, 2000). However, there is little or no career anchor research which examines gender differences. Willemsen and Van Vianen (2008) have suggested that natural differences in temperament between women (more emotionally attuned, kind, sensitive) and men (more technical, aggressive, and risk-oriented), could account for occupational tendencies, with women preferring jobs such as teachers, nurses, and secretaries and men preferring jobs such as firemen, policemen, and technicians. Studies such as these may not directly relate to career anchors, but they provide expectations and a rationale for comparing male career anchor structures to female career anchor structures.

The Proposed Study

This study is the first of two studies investigating new measurement methods which might solve the twin problems of the Likert-rating bias and the analytical dead-end of ipsative-ratings. This study embodies a method for testing and hopefully correcting

the Likert bias, to be followed by a future study employing a modified non-ipsative paired comparison method that can be tested against the standard ipsative method.

In the present study, a new variation of COI is designed in order to avoid both scale inflation and the ipsativity problem. The theory of signal detectability (TSD) has been notably successful in separating bias from detectability in psychophysical research (Coombs, Dawes, & Tversky, 1970). The two major determinants of bias in TSD are reward or cost and prior probability. Manipulations of reward or cost can be used to reduce the acquiescent bias in career anchor measurement. In the standard Likert-Scale method, participants tend to agree with many competing anchor questions (Barclay, 2009) because there is no cost for them to so respond. If we were to attach costs to their choices, participants will be more prudent, conservative and careful about their choices. Accordingly, we revised the COI using a monetary format, which asks participants to decide how much salary they would give up to get a job consonant with a particular anchor. It is hypothesized that this will create more careful and varied choices. In terms of structure it should also create a correlation matrix in which the career anchors are overall less correlated with one another.

The present study also examines Schein's proposed greater elaboration of career anchor structure in later stages of career development, and compares male to female career anchor structure. The first part of the study involves the development of a measurement method for career anchors that solves the problem of rating scale inflation. In the second part, career anchor structures of young respondents are compared to those of older respondents to test Schein's longitudinality hypothesis. Finally, in the third part, structural equation models are used to test the five career anchor theories against

empirical data from three groups: young male respondents, young female respondents, and older respondents. These analyses are used to compare the fit of the five models to the empirical career anchor structures, as a test of both longitudinal (age) effects and also gender effects.

The three parts of this study are guided by four hypotheses:

Hypothesis 1: It is proposed that the "economic exchange" method of measuring career anchor structure will solve the problem of acquiescent bias. Specifically, it is hypothesized that the economic exchange method will create greater variation in career anchor ratings. It is also hypothesized that these more varied ratings will in turn create more varied and clearly differentiated career anchor correlation matrices, which will enable us to more easily find career anchor opposites.

Hypothesis 2: Career anchor structure will become more clearly differentiated at successively higher levels of career development. That is, the oppositional nature of career anchor choices will be most clear and obvious in those who have been in their career for a long time as maintained by Schein (2006).

Hypothesis 3: It is hypothesized that no single career anchor model is superior for both old and young respondents, or for male and female, that model dominance will be mediated by both age and gender.

Hypothesis 4: It is hypothesized that model dominance will vary for persons from various occupational groups in the six studies reviewed by Barclay.

Methods

Participants

There are 330 participants in this study. Primary participants are male and female students from 100-level or 200-level psychology classes at Brigham Young University. Each participant is to nominate other persons as secondary participants: family members or friends the age of their parents (one male and one female), family members or friends the age of their grandparents (one male and one female), and an opposite sex friend or family member the age of the participant. Each person, including both participant and also nominee of the participant, fills out an electronic career anchors questionnaire. Students receive course credit for their participation in this study, as well as additional credit for their nominees who participate. We ended up with 310 participants of younger age and 20 participants in the older age groups (See Table 1). Because of the small number of older participants, the four groups (male parent age, female parent age, male grandparent age, and female grandparent age) are combined into two groups (male older participants and female older participants).

Table 1

Summary of Demographics of Participants

		Years of Work			
Group	*N*	*Mean*	*SD*	*Low*	*High*
Young (<=35 yrs)	310	3.79	3.36	0	35
Male	145	4.42	3.2	0	15
Female	165	3.25	3.4	0	35
Older (> 35 yrs)	20	23.8	11.24	1	45
Male	11	25.64	13.57	1	45
Female	9	21.56	7.7	12	36

Procedure

A member of the research team visited classrooms to recruit participants. The study was described, and students interested in participating signed the consent form and then completed the survey online (in Qualtrics under through the SONA system). None of the materials are translated into languages other than English, so participants are required to speak and read English in order to participate.

Measures

As the first part of this study, the 40 items of Schein's Career Orientation Inventory (COI) are used in the standard way with a six point Likert scale. The standard 40 item COI is shown in part 1 of the Appendix A. Each of the 40 items consists of a self-descriptive statement, such as "I dream of being so good at what I do that my expert advice will be sought continually." Participants are asked to rate how true those descriptions are for them.

In order to control for acquiescent response bias, an "economic exchange" version of the original 40-item COI was created, the items were revised so they were descriptions of properties of jobs, as shown in part 2 of Appendix A. Participants choose how much salary they would be willing to give up to obtain a job with that property. This rating is done using a six point Likert scale. This task is directly comparable to the task of the first part of the study, the 40 item COI in standard format, but altering the ratings by requiring the participants to indicate in economic terms how much each career anchor is worth to them, with the intent of removing the acquiescent response bias.

Results

The dataset for this study consists of 330 rows and 86 columns. The 330 rows contain the responses for each of the 330 respondents in the study, 310 of which are

young men and young women (less than 35 years old), and 20 of which are the older group (over 35 years old), who are referred by students.

The 86 columns consist of six columns of demographic data (ID number, gender, age group, age, whether currently employed, years in the workforce), followed by two types of primary data. Type A, the first 40 columns of primary data, are Likert-scale ratings on the 40 career anchor items of the Career Orientations Inventory (COI). Type B, the last 40 columns, consists of the "economic exchange" responses to each of the 40 items of the COI.

Testing the New Measurement Method

The first part of Hypothesis 1, that the economic exchange measurement method will increase the variance in career anchor ratings, is tested with a variance comparison of Type A (Likert-scale) data with Type B (economic exchange) data. In particular, the variances of Likert ratings (which are on a 6-point scale) and the variances of economic exchange ratings (which are also on a 6-point scale) across the eight career anchors are calculated for each of the 330 respondents individually and a correlated groups t-test is used to test mean variance for the Type A ratings against the mean variance for the Type B ratings. The hypothesis holds that the variance of within-person ratings is significantly greater for economic exchange ratings, Type B, than for the ratings on the standard Likert scale method, Type A.

Table 2 presents the results of the correlated t-test of the average ratings for the 310 participants in the young group, and also the correlated t-test of the average ratings for the older (>35) group. The results of this test of Hypothesis 1 are highly significant for the young group, but not for the older group. The mean variance for Type B ratings

(31.3) is about 27% higher than those for Type A ratings (25.3) for the young group. However, for the older group of participants the two are about the same.

Table 2

Comparison of the Mean Variances of Type A Likert Scale Data to the Mean Variances of Type B Economic Exchange Data for Both the Young Group Participants and Also the Older Group Participants, Using Correlated Groups t-Tests

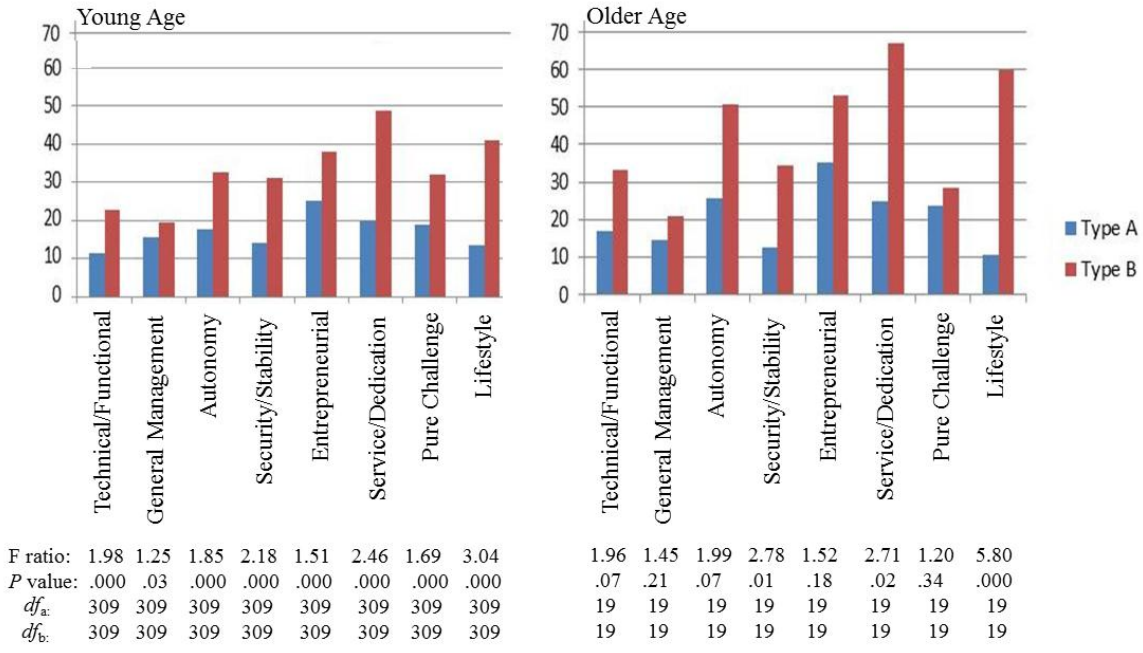
					95% CI	
Group	*M*	*SD*	*t(df)*	*p*	*LL*	*UL*
Young (<=35 yrs)						
Type A	25.3	16.11			23.49	27.11
Type B	31.29	24.41	-4.38(305)	.000	28.55	34.04
Older (> 35 yrs)						
Type A	20.46	12.43			14.64	26.28
Type B	19.72	5.02	0.16 (19)	.5638	9.21	30.24

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

These are within person variances, that is, the individual variances for each of the 330 respondents across the eight career anchors. As such, they are an indication of whether the economic exchange method of measuring career anchors is successful in differentiating the anchor ratings within each person, and we see that they are for young respondents, but not for the older ones. A second question can be asked. Do the economic exchange ratings vary more across persons within each career anchor category than the standard Likert ratings? The answer is again yes for the young group of participants, but even more strongly so as shown in the left set of bar graphs and F ratios in Figure 5. This is tested by calculating variance for each individual career anchor across the 310 respondents on Type A ratings and also on Type B ratings. An F ratio is

then created for each by dividing the larger variance of each by the smaller. The p value for each ratio is also obtained. The F ratios for these eight variance comparisons for younger age respondents range from 1.25 to 3.04, with all F ratios being significant.

Although the within-person variances for the older group of participants did not conform to Hypothesis 1, it can be seen in the right set of Figure 5 that the across-person variances do. In fact, if anything the results are stronger than for the younger participants, with the F ratios ranging from 1.20 to 5.80. Only three of the eight F ratios (Security/Stability, Service/Dedication, and Lifestyle) are statistically significant, but this is due to the small sample size for the older group of participants (df_a =19 and df_b =19 for the older group F ratios rather than df_a =309 and df_b 309).



	Technical/Functional	General Management	Autonomy	Security/Stability	Entrepreneurial	Service/Dedication	Pure Challenge	Lifestyle
F ratio:	1.98	1.25	1.85	2.18	1.51	2.46	1.69	3.04
P value:	.000	.03	.000	.000	.000	.000	.000	.000
df_a:	309	309	309	309	309	309	309	309
df_b:	309	309	309	309	309	309	309	309
	1.96	1.45	1.99	2.78	1.52	2.71	1.20	5.80
	.07	.21	.07	.01	.18	.02	.34	.000
	19	19	19	19	19	19	19	19
	19	19	19	19	19	19	19	19

Figure 5. Paired bar graphs and F ratios comparing the variances for Type A standard Likert career anchor ratings to those for Type B economic exchange career anchor ratings across 310 younger respondents (left set) and 20 older respondents (right set).

Barclay (2009) found that none of the four competing octagonal career anchor models he tested provided a reasonable fit to the empirical data from seven career anchor studies. He attributed this to the acquiescent bias problem. That is, it was argued that the tendency of respondents to agree with most or many of the anchor statements provided too little variance in the within-person ratings to adequately differentiate the eight career anchors from one another, and the eight anchors were therefore found to be highly correlated with one another, with none showing the kind of oppositionality required to accommodate the mutually exclusive pairs implicit within any of the octagonal models (Barclay, 2009). That is to say, the failure of the models was attributed to a psychometric problem. We have proposed the economic exchange model as an antidote to the psychometric problem, with the idea that attaching monetary costs to "buying into" each career anchor would increase the variance in ratings. We have seen that this is true at least for young respondents on the within-person variances, and for both groups on the between-person variances. The economic exchange rating method increases variance, both the variance of acquiescence to a particular career anchor across the participants, and also the cross-anchor variance within a single participant.

As a secondary test of Hypothesis 1, 8x8 correlation matrices are calculated among the eight career anchor scores on the Type A data and on the Type B data. It is hypothesized that Type B economic exchange data will have a significantly greater range of correlation coefficients (measured both by a simple range of values and also a variance of values) than Type A Likert ratings. It is also hypothesized that the correlation coefficients will be lower on average (some even being negative) for the economic

exchange data, compared to the standard Likert data where, as Barclay (2009) found, the eight career anchors are all fairly highly correlated with one another.

Surprisingly, although our hypothesis was correct with regard to the increased variance of ratings for economic exchange data, it is not correct with regard to the increased range of correlation coefficients among the career anchors and the expected overall lower mean correlation coefficients. For the young group of participants, the correlation coefficients for the Type A career anchor ratings range from -.1708 to .6659, with a variance of .0382 for the 28 coefficients. The correlation coefficients for the Type B ratings range from .1775 to .6597 with a variance of .0163. The comparison of these two variances is statistically significant, but in the direction opposite to that proposed by our hypothesis, $F(27,27) = 2.34$, $p = .015$. That is, the variance of the correlation coefficients is actually higher for the Type A standard likert ratings than for the Type B economic exchange ratings when tested for the young group of respondents.

From Figure 6, we can see that when the 28 correlation coefficients for the Type A standard Likert career anchor ratings are placed in descending order from left to right, the values of the correlation coefficients for the Type B economic exchange ratings do not correspond to them at all well. Whereas the correlation coefficients for the Type A ratings cover a fairly broad range from low negative values to moderate positive values, the Type B ratings are within a fairly narrow range of positive values. In other words, there seems to be more useful career anchor differentiating information in the old standard method than in our new economic exchange method, notwithstanding the increased variance in economic exchange ratings. Also, the lack of correspondence between the two (that is, that the relatively random order of magnitudes from left to right

of the Type B coefficients when the Type A coefficients are in descending order) indicates that the economic exchange method is giving information not at all in agreement with the standard method. We expected and hoped that the economic exchange method would give information consistent with the standard method but with an improved range of coefficients, but it fails us on both counts.

The same pattern is obtained for the older group of participants, as shown in the right set of Figure 6, but perhaps even amplified somewhat. For the older group of participants, the correlation coefficients for the Type A career anchor ratings range from -.4153 to .8262, with a variance of .0877. The correlation coefficients for the Type B ratings range from .3636 to .9124 with a variance of .0198. The comparison of these two variances is statistically significant, again in the direction opposite to that proposed by our hypothesis, $F(27,27) = 4.43$, $p = .0001$.

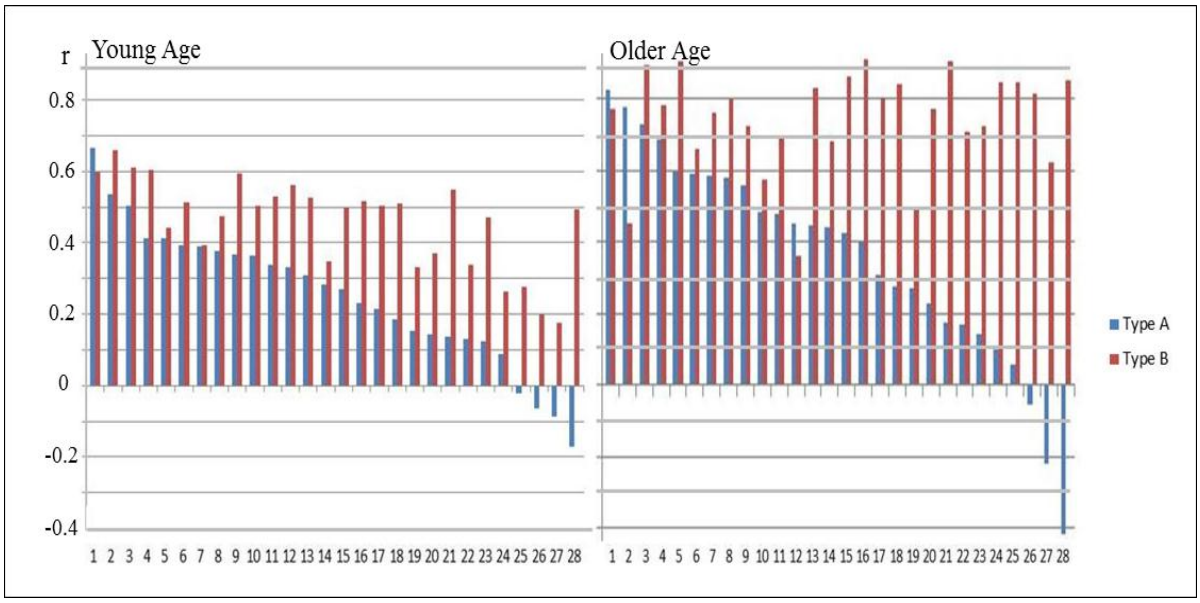


Figure 6. Paired bar graphs comparing the 28 corresponding correlation coefficients for the Type A standard Likert career anchor ratings to those for Type B economic exchange career anchor ratings for the young participants group (left set) and the older participants group (right set).

Apparently, there is something wrong in our logic in supposing that when the variance in ratings is increased it will also increase the diversity among the career anchors, in terms of being less correlated with one another.

Testing Age Differences: The Longitudinality Hypothesis

Hypothesis 2, that career anchor structure is more clearly differentiated for those who have been in their careers for a long time, is tested with a *t*-Test of the effects of age group on indices of oppositionality among the career anchors. It is hypothesized that older respondents have higher mean indices of oppositionality among anchors than will younger respondents.

From Figure 7, we can see that there is some evidence of mutual exclusivity in the career anchor pairs, both in the correlation matrix of the young group, and also that of the older groups. As shown in this figure, the two career anchors that are consistently included in oppositionality (negative correlations) in both correlation matrices are General Management and Security/Stability.

Young Participants

	Tech	Chalng	Entrep	Mngmt	Auton	Lifest	Service	Security
Technical/Functional	1	.535	.392	.367	.413	.268	.213	.230
Challenge	.535	1	.365	.308	.378	.281	.338	.153
Entrepreneurial	.392	.365	1	.413	.666	.087	.132	-.021
General Management	.367	.308	.413	1	.390	-.087	-.064	.144
Autonomy	.413	.378	.666	.390	1	.138	.185	-.171
Lifestyle	.268	.281	.087	-.087	.138	1	.505	.333
Service	.213	.338	.132	-.064	.185	.505	1	.125
Security	.230	.153	-.021	.144	-.171	.333	.125	1

Older Participants

	Technical/	Challenge	repreneu	anageme	Autonomy	Lifestyle	Service	Security
Technical/Functional	1	.589	.688	.058	.449	.177	.730	.098
Challenge	.589	1	.779	.427	.453	.482	.826	.272
Entrepreneurial	.688	.779	1	.444	.582	.170	.594	-.056
General Management	.058	.427	.444	1	.485	.142	.227	-.218
Autonomy	.449	.453	.582	.485	1	.310	.559	-.415
Lifestyle	.177	.482	.170	.142	.310	1	.595	.401
Service	.730	.826	.594	.227	.559	.595	1	.275
Security	.098	.272	-.056	-.218	-.415	.401	.275	1

Figure 7. Correlation matrices of the eight career anchors for the younger participants and the older participants showing the three oppositional pairs involving general management, and the three oppositional pairs involving security.

An independent groups *t*-Test of the oppositional correlation between young age group and older age group is used in testing this hypothesis. Table 3 shows that there is no evidence for the two age groups having a difference in oppositionality.

Table 3

Comparison of the Magnitude of Correlation Coefficients for Young Participants and Older Participants in Career Anchors Found to be Negatively Correlated for Either Group

					95% CI	
Group	*M*	*SD*	*t(df)*	*p*	*LL*	*UL*
Young (<=35 yrs)	-.04	.05			-.18	.11
Older (> 35 yrs)	-.06	.12	0.1913(4)	.5712	-.39	.26

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Testing Model Fit

Hypotheses 3 and 4 are both used to test the model fit of the five competing models with respect to a variety of empirical datasets. Hypothesis 3 applies to the three datasets from the present study (young males, young females, and older). It holds that no single career anchor model is superior across the three groups, that model dominance is mediated by both age group and gender. Hypothesis 4 applies to six studies from previous career anchor literature, the six reviewed in Barclay (2009). It holds that no single career anchor model is consistently superior across these six studies, that model dominance is mediated by the idiosyncrasies of individual studies. Confirmatory factor analysis (CFA), a special case of structural equation modeling (SEM), is used to identify the empirical fit of each of five competing career anchor models (the four models identified by Chapman plus an additional generated model from the results of this study). Both data from this study and from six previous studies in Barclay's dissertation are used to test the five competing models against one another. One of the studies from

Barclay's dissertation secondary analysis (Igbaria, 1999) is not used because of a lack of information in its correlation matrix.

In preparation for testing hypothesis 3, a principal component analysis is conducted on each of the three Type A Likert Scale datasets of this study to determine which of the three provides the best empirical base for creating a fifth career anchor model. It turns out that the older female group accounts for the most total variance in the eight anchor ratings, with more than 88% from three factors, as shown in Table 4. The new career anchor model is therefore created from this dataset.

Table 4

Principal Component Summary Table for Analysis of Type A Likert-Scale Career Anchor Choices Data for the Female Older Group Participants

	Loadings			Communalities				
	Factor 1	*Factor 2*	*Factor 3*	*Factor 1*	*Factor 2*	*Factor 3*	*Total*	*Uniqueness*
Technical/ Functional	.9199	-.1258	.1786	.8462	.0158	.0319	.8939	.1061
General Manage	.5203	.1941	-.6284	.2707	.0377	.3949	.7032	.2968
Autonomy	.5366	-.7836	.0441	.2879	.6140	.0019	.9038	.0962
Security/ Stability	.1573	.9394	.0603	.0247	.8824	.0036	.9108	.0892
Entrepreneurial	.9260	-.0616	-.1596	.8574	.0038	.0255	.8866	.1134
Service/ Dedication	.9568	-.0989	.2093	.9154	.0098	.0438	.9691	.0309
Pure Challenge	.9148	.1085	-.2260	.8369	.0118	.0511	.8997	.1003
Lifestyle	.1894	.1335	.9237	.0359	.0178	.8532	.9069	.0931
Sum of squares by columns:				4.0751	1.5930	1.4059	7.0740	.9260
Percent of sums of squares:				50.94%	19.91%	17.57%	88.43%	11.57%

Figure 8 shows the vector plot for the factor pattern (factor loadings) of Table 4, for the older female group. There are two pairs of mutually exclusively career anchors. One is Security/Stability vs. Autonomy/Independence. The other one is General Management vs. Lifestyle. The other four anchors (Service/Dedication, Pure Challenge, Technical/Functional Competence, and Entrepreneurship/Creativity) are found to be complementary to each other, and are gathered into a single bundle orthogonal to these two oppositional pairs (which two pairs are also orthogonal to one another).

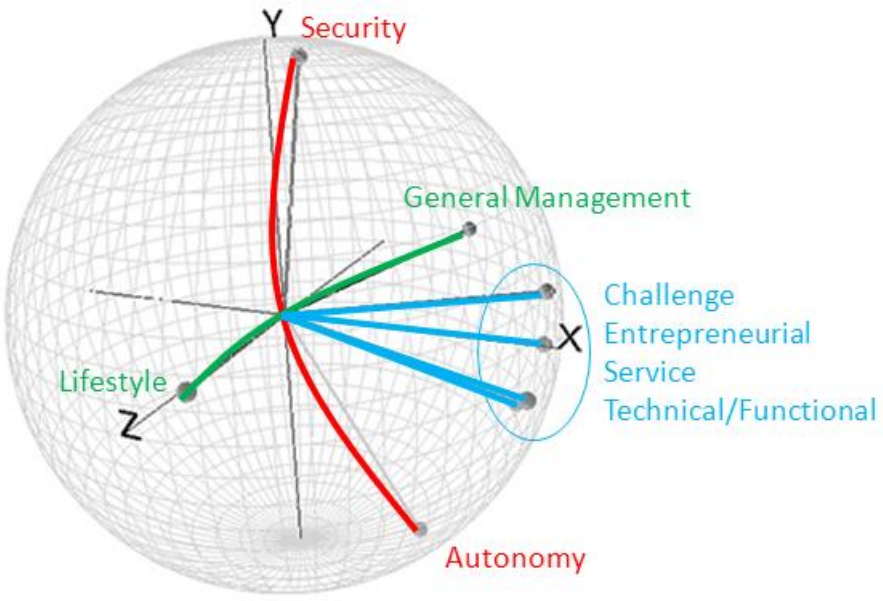
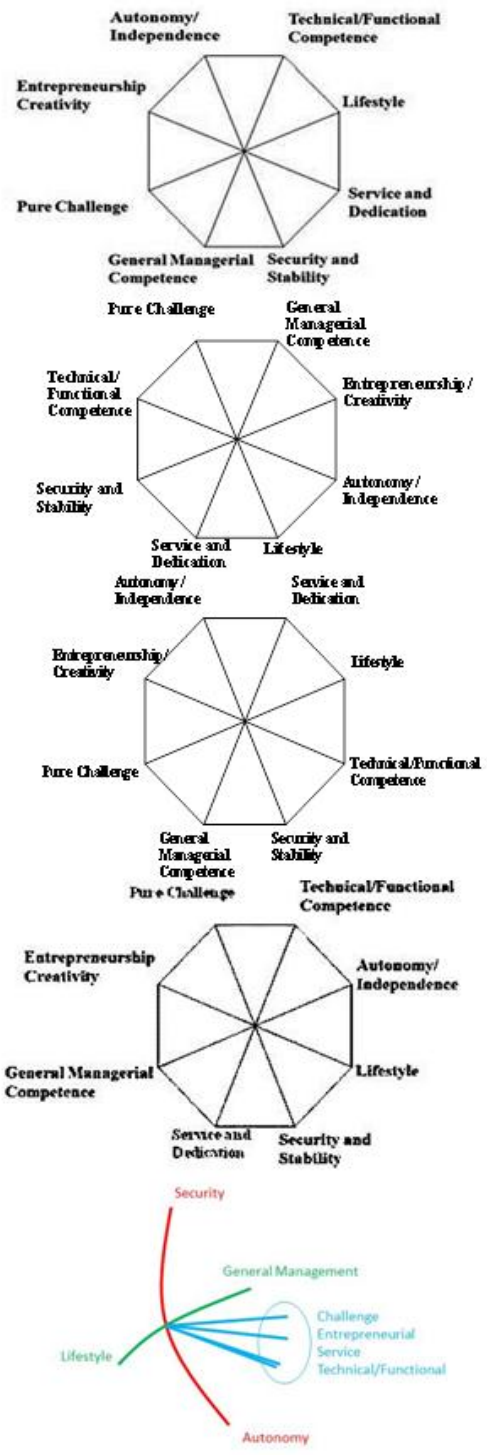


Figure 8. The three-dimensional career anchor model extracted from the older female participants in the present study.

Adding this model to the four examined by Chapman (2009) and Barclay (2009) we now have five competing career anchor models: the Schein (1974) model, the Feldman & Bolino (1996) model, the Bristow (2004) model, the Chapman (2009) model

and the Cai (2012) model. Figure 9 shows the comparisons of the five career anchor models in their visual representation and also in their CFA-model set-up matrices. The Cai model, the one extracted from this study, has an unusual visual representation because it uses a three-dimensional space to define two oppositional pairs in two of the dimensions, and an orthogonal bundle of four complementary anchors in the remaining dimension. By contrast, the other four models have octagonal representations consisting of four oppositional pairs that can be represented within a two-dimensional figure.



Schein	Pair 1	Pair 2	Pair 3	Pair 4
Tech/Func	1	0	0	0
Gen Mana	-1	0	0	0
Autonomy	0	1	0	0
Security	0	-1	0	0
Entrepr	0	0	1	0
Service	0	0	-1	0
Challenge	0	0	0	1
Lifestyle	0	0	0	-1

Feld & Bol	Pair 1	Pair 2	Pair 3	Pair 4
Tech/Func	1	0	0	0
Gen Mana	0	1	0	0
Autonomy	-1	0	0	0
Security	0	0	1	0
Entrepr	0	0	-1	0
Service	0	-1	0	0
Challenge	0	0	0	1
Lifestyle	0	0	0	-1

Bristow	Pair 1	Pair 2	Pair 3	Pair 4
Tech/Func	1	0	0	0
Gen Mana	0	0	1	0
Autonomy	0	1	0	0
Security	0	-1	0	0
Entrepr	-1	0	0	0
Service	0	0	-1	0
Challenge	0	0	0	1
Lifestyle	0	0	0	-1

Chapman	Pair 1	Pair 2	Pair 3	Pair 4
Tech/Func	1	0	0	0
Gen Mana	0	1	0	0
Autonomy	0	-1	0	0
Security	0	0	0	1
Entrepr	0	0	1	0
Service	-1	0	0	0
Challenge	0	0	0	-1
Lifestyle	0	0	-1	0

Cai	Pair 1	Pair 2	Pair 3
Tech/Func	0	0	1
Gen Mana	1	0	0
Autonomy	0	1	0
Security	0	-1	0
Entrepr	0	0	1
Service	0	0	1
Challenge	0	0	1
Lifestyle	-1	0	0

Figure 9. A comparison of the five career anchor models in their octagonal representation and their CFA model set-up matrices. Cai's model is the exception in that it uses a three-dimensional representation rather than an octagon.

Confirmatory factor analysis is used to evaluate the fit of the five competing career anchor models against the six datasets from this study and also against the six previous empirical studies from Barclay (2009). Five indices of fit are obtained from the individual confirmatory factor analyses on each of the twelve datasets (six from the present study and six from Barclay) against which each of the five career anchor models is tested.

The five confirmatory factor analysis model-fit indices used in this study are: chi-square divided by degrees of freedom, AIC (Akaike Information Criterion), BIC (Bayesian Information Criterion), CFI (Comparative Fit Index), and RMSEA (Root Mean Square Error of Approximation). These five indices are commonly used in structural equation modeling to indicate how well empirical data fit with the models. The standard goodness-of-fit chi-square statistic is a traditional way to look at model fit, but its values cannot be interpreted in a standard way because of sample size (Kline, 2011). For that reason, we use a chi-square value divided by sample size. A large chi-square goodness-of-fit test indicates the model has a poor fit to the data (Kline, 2011). AIC and BIC are modifications of the standard goodness-of-fit chi-square statistic (Kline, 2011). As such, higher values of AIC and BIC also indicate a worse fit for the model. Standard chi-square, AIC, and BIC are all sensitive to sample size (Kline, 2011). RMSEA and CFI are less affected by sample size (Kline, 2011). RMSEA is an absolute measure of model fit based on a non-centrality parameter which tests the error variance (Kenny, 2003). Higher RMSEA values indicate worse model fit. CFI is the ratio between discrepancies of the target model and an independent model (Kline, 2011). It is useful when comparing the fit of two or more models. CFI has been demonstrated to be more

useful than the other four indices in differentiating models (Kline, 2011) and we also find that here. Given a set of possible models, the preferred model is the one with the highest CFI value, especially when it's above 0.95 (Hooper, D., Coughlan, J., & Mullen, M. R., 2008). Amos is used to get all five of these fit indices.

Two matrices of data summarize the confirmatory factor analysis model-testing phase of this study. The first is a 30x5 matrix for the data of this study. The five columns consist of the five fit indices. The thirty rows consist of the five career anchor models applied to each of six subsets of the data from the 330 participants: the young male participants, the young female participants, and the older participants (combined because of small N), repeated for both the Type A standard Likert form of the COI, and also for the Type B economic exchange form of the COI.

The second 30x5 matrix consists of the data from Barclay's (2009) review dissertation, with the same five fit indices as the columns and the rows consisting of the five models tested against each of six studies from previous career anchor literature. The first author's last name is used to indicate each of these studies. They are Igbaria (1993a), Igbaria (1993b), Boshoff (1994), Igbaria (1995), Tan (2001), and Hsu (2002). We use the original correlation matrices reported in these studies to test the five career anchor models against them.

Of course the five indices of fit give somewhat redundant information, but also some information that is unique to each. A principal component plot is an ideal method for displaying the pattern of information from each of these two 30x5 summary matrices. Table 5 shows the factor loadings and communalities from a principal component analysis of the fit statistics for the five theoretical models applied to the six datasets of the

present study. We can see from this table that three components account for over 99% of the total variance in the pattern of fit-index results for the thirty analyses.

Table 5

Principal Component Analysis Summary Table of Five Indices of Fit from the Confirmatory Factor Analyses of Five Models (Schein, Feldman and Bolino, Bristow, Chapman, and Cai) Tested Against the Six Datasets of the Present Study (Young Male, Young Female, and Older Respondents Using Both Type A and Also Type B COI Data)

	Loadings			Communalities			
	Factor 1	*Factor 2*	*Factor 3*	*Factor 1*	*Factor 2*	*Factor 3*	*Total*
AIC	.961	-.255	-.076	.923	.065	.006	.993
BIC	.918	-.391	-.030	.843	.153	.001	.997
CFI	-.076	-.048	.996	.006	.002	.992	1.000
RMSEA	-.388	.919	-.068	.151	.844	.005	1.000
Chi^2/df	.966	-.234	-.078	.934	.055	.006	.995
Sum of squares by columns:				2.856	1.119	1.009	4.985
Percent of sums of squares:				57.13%	22.39%	20.19%	99.70%

Table 6 shows the factor loadings and communalities from a principal component analysis of the five career anchor models applied to six studies from Barclay's review study (2009). We can see from this table that the three factors also account for over 99% percent of the total variance in the pattern of fit-index results for the thirty analyses of Barclay's studies.

Table 6

Principal Component Analysis Summary Table of Five Indices of Fit from the Confirmatory Factor Analyses of Five Models (Schein, Feldman and Bolino, Bristow, Chapman, and Cai) Tested Against the Six Datasets of Barclay's (2009) Secondary Analysis of Six Career Anchor Studies

	Loadings			Communalities			
	Factor 1	*Factor 2*	*Factor 3*	*Factor 1*	*Factor 2*	*Factor 3*	*Total*
AIC	.983	.123	-.127	.967	.015	.016	.998
BIC	.987	.103	-.122	.974	.011	.015	.999
CFI	-.154	-.186	.970	.024	.035	.942	1.000
RMSEA	.160	.969	-.187	.026	.939	.035	1.000
Chi^2/df	.978	.159	-.122	.956	.025	.015	.996
Sum of squares by columns:				2.946	1.025	1.022	4.993
Percent of sums of squares:				58.91%	20.50%	20.45%	99.86%

Figure 10 shows, in a side-by-side format, a graphical display of the results from the two principal component analyses of fit statistics. The top panel of each is the vector plot, that is, the location of the vectors for each of the five model-fit statistics from the confirmatory factor analyses as they are located within the three factor space. These, in fact, define the three-factor space. The bottom panel for each shows the location of the thirty factor scores for each analysis, the analysis of the 330 participants from this study on the left, and the analysis of the data from six previous studies in Barclay's dissertation (2773 participants) on the right.

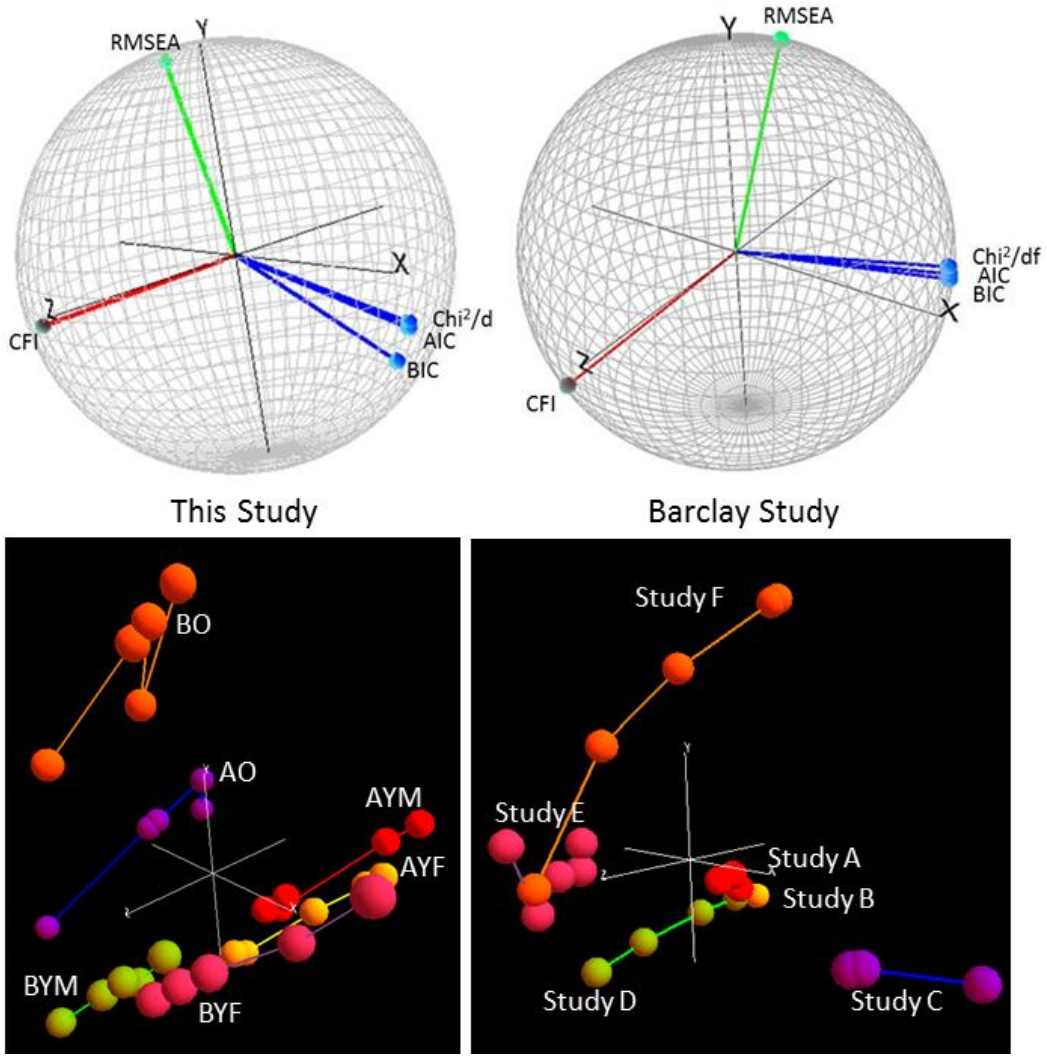


Figure 10. The two upper panels compare the vector spaces of the five model-fit statistics for the CFA analyses of this study (left panel) and the CFA analyses of the studies from the Barclay (2009) meta-analysis (right panel). The two lower panels show the corresponding factor score positions in this space, colored by dataset for the six datasets of this dissertation (left lower panel), and colored by study for the six studies of Barclay (right lower panel).

The first thing to notice is that the vector patterns (the two upper panels) are very similar for the two analyses. In both the left panel (for the data of the present study) and

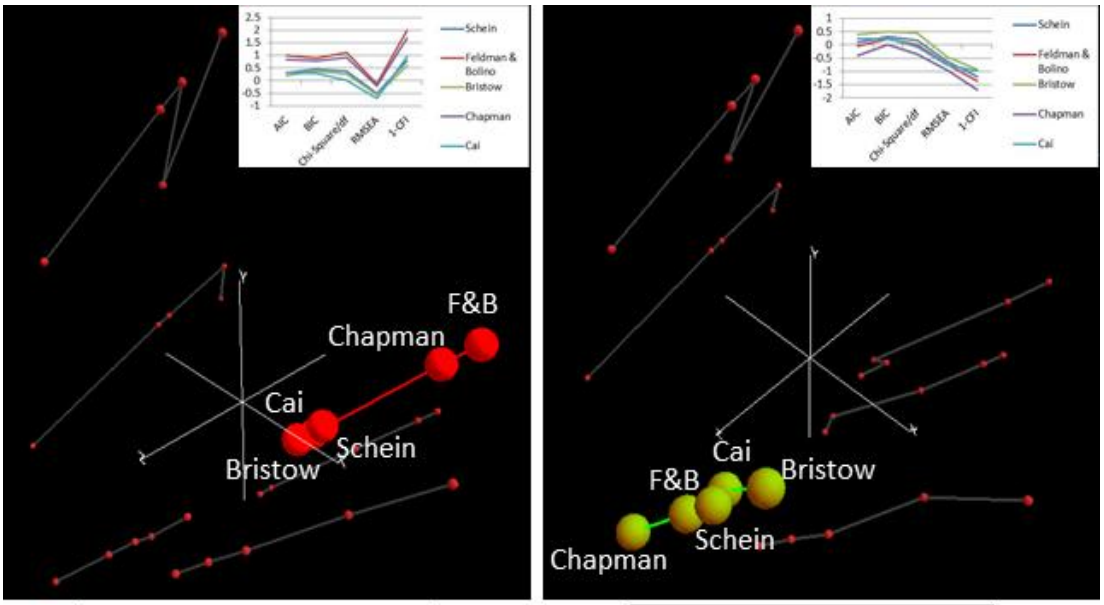
the right panel (for the data from the Barclay studies), the X axis is defined by the AIC idex, the BIC index, and the index for Chi Square divided by degrees of freedom. That is, the studies with factor scores on the right side of the X axis (AYF and AYM in the left panel, and Study C in the right panel), are characterized by a bad fit on these three primary fit statistics. On the other hand, data with factor scores on the left side of the X axis (AO and BO in the left panel, and Studies E and F in the right panel) have a relatively good fit on these three primary fit statistics.

Both the Y axis and also the Z axis are defined by a single fit index. The Y axis is defined by the RMSEA index, and the Z axis by the CFI index. A high score on the Y axis (the upper regions of the space) are typified by data that have a relative high standard deviation among the residual values from the model reproduced correlation matrix (BO in the left panel, and Study F in the right panel) indicating a poor fit. Data with a high score on the Z axis (found in the frontal regions of the space) are characterized by a relatively good fit on the CFI fit index.

As will be shown in Figures 11 through 16, there is a tendency for the data source (particular age by scale dataset in the present study, and individual research study for the Barclay data) to be characterized by the location in the X-Y space, and for the five individual career anchor models within each data source to be characterized by the location in the Z direction, the CFI index. That is, regardless of which dataset or study, there seem to be some career anchor models that have a good CFI fit, and some bad. This is particularly true for the left panel, the datasets from the present study. In other words, the CFI index seems to be the best of the five indices in differentiating among the models, consistent with Kline's (2011) statement.

We now examine hypothesis 3 and 4 separately. Hypothesis 3 claims that no single model will be superior for both old and young respondents, or for male and female, that model dominance will be mediated by both age and gender. The following figures (Figure 11 to Figure 13) show the factor score locations of the model fit for each individual group. The first group is young male participants using the Type A Likert scale method. From Figure 11, we can see that Feldman and Bolino's model and Chapman's model do not work well with data from this participant group on the CFI fit index. They have lower Z axis CFI values than Schein's, Bristow's and Cai's models (whereas high values indicate better fit). All five models are about equal on the X and Y axis positions. All model fit indices in the line graphs are standardized to make them comparable.

Figure 11 shows the results for the young male participants using the Type B economic exchange method. Again, all five models have about equal locations in the X-Y space, but differ on Z. The best model on the Z axis CFI index is Chapman's model. Bristow's model does not fit well with the data. The other three models are midway between these two. The CFI fit of the economic exchange data is seen to be somewhat better for all five models than the comparable CFI fit of the Likert data for these young male participants.



	Factor 1	Factor 2	Factor 3
Schein	0.182	-0.544	-0.795
F&B	0.974	0.125	-1.918
Bristow	0.050	-0.662	-0.611
Chapman	0.778	-0.031	-1.641
Cai	-0.125	-0.914	-1.020

Type A Likert Scale

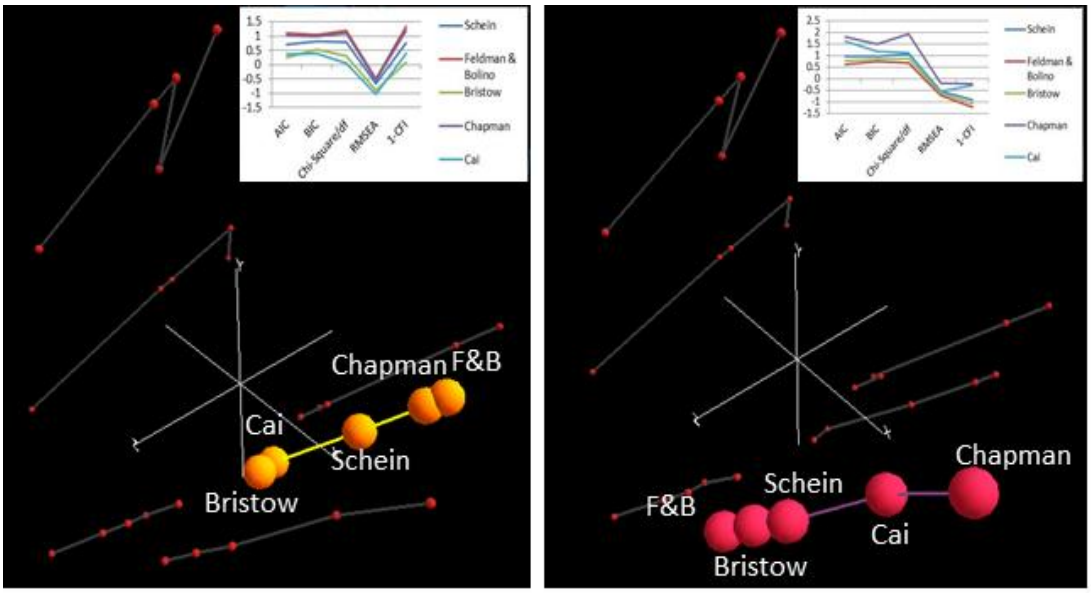
	Factor 1	Factor 2	Factor 3
Schein	0.114	-0.556	1.195
F&B	-0.080	-0.737	1.321
Bristow	0.458	-0.244	0.952
Chapman	-0.505	-1.141	1.603
Cai	-0.046	-0.787	0.954

Type B Economic Exchange

Figure 11. Factor score comparisons of the Type A Likert-scale ratings (left panel) with the Type B economic exchange ratings (right panel) for young male participants. Factor score values are shown in the two tables below each figure, and line graphs of the standardized model-fit statistics are shown in the insets of each figure.

The second group is young female participants. Their results for the Type A Likert scale method are given in the left panel of Figure 12. We see again that all five models have about equal location in the X-Y space, but differ on Z. The two best models on the Z axis CFI index are Cai's and Bristow's with Feldman and Bolino's model and Chapman's model not fitting as well, and Schein's model in the middle.

The Type B economic exchange results are shown for the young female participants in the right panel of Figure 12. We can see that Chapman's model and Cai's model do not work well with data in this group on the CFI fit index. They have lower Z axis CFI values than Schein's, Feldman and Bolino's, and Bristow's models. The economic exchange results in the right panel are farther to the right on the X axis than are the Likert results in the right panel, and therefore do not work well on the AIC, BIC, and Chi-square/df indices. They have higher X axis values (with high values indicating worse fit) than the other three models.



	Factor 1	Factor 2	Factor 3
Schein	0.604	-0.522	-0.746
F&B	1.023	-0.195	-1.265
Bristow	0.068	-0.966	-0.125
Chapman	0.926	-0.274	-1.143
Cai	-0.126	-1.219	-0.453

Type A Likert Scale

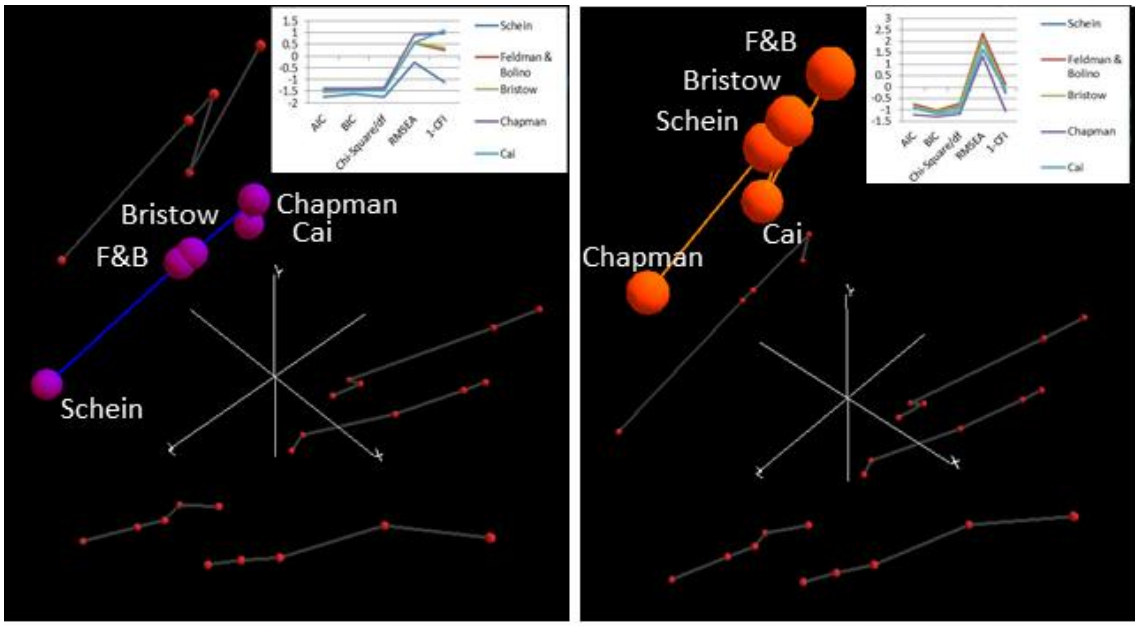
	Factor 1	Factor 2	Factor 3
Schein	1.114	-0.044	0.994
F&B	0.677	-0.398	1.244
Bristow	0.880	-0.228	1.118
Chapman	2.109	0.743	0.407
Cai	1.450	0.086	0.409

Type B Economic Exchange

Figure 12. Factor score comparisons of the Type A Likert-scale ratings (left panel) with the Type B economic exchange ratings (right panel) for young female participants. Factor score values are shown in the two tables below each and line graphs of the standardized model-fit statistics are shown in the insets of each figure.

The third group is older participants, shown in Figure 13, with the Type A Likert scale results in the left panel and the economic exchange scale results in the right panel. We see that Schein's model works best with Likert data for this group, with the other four models being substantially worse on the CFI index fit, the Z axis, with again all five

models being about equal on the X and Y dimensions. In contrast, we see that Chapman's model works best for the economic exchange results for this older group of participants, with the other four models being somewhat worse on CFI index fit. It is of note that the older group of participants are much farther to the left on the X axis than the data for the younger respondents, indicating better fit on AIC, BIC, and chi-square. The economic exchange data in the right panel is highest of any dataset on the Y axis indicating bad fit on the RMSEA index.



	Factor 1	Factor 2	Factor 3
Schein	-2.062	-1.072	0.934
F&B	-1.630	-0.122	-0.382
Bristow	-1.598	-0.058	-0.493
Chapman	-1.420	0.312	-1.076
Cai	-1.685	-0.176	-1.238

Type A Likert Scale

	Factor 1	Factor 2	Factor 3
Schein	-0.327	2.113	0.342
F&B	-0.088	2.515	0.015
Bristow	-0.239	2.260	0.223
Chapman	-0.854	1.189	1.038
Cai	-0.619	1.548	0.159

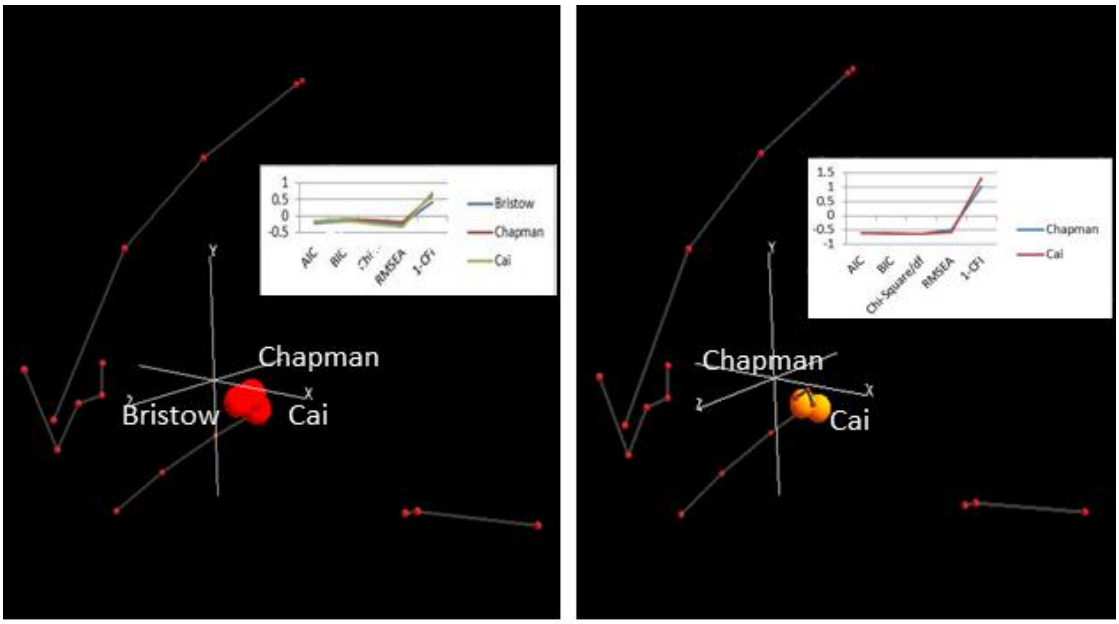
Type B Economic Exchange

Figure 13. Factor score comparisons of the Type A Likert-scale ratings (left panel) with the Type B economic exchange ratings (right panel) for older participants. Factor score values are shown in the two tables below each and line graphs of the standardized model-fit statistics are shown in the insets of each figure.

Consistent with hypothesis 3 we do indeed find that no single career anchor model is superior for both old and young respondents, nor for both male and female

For hypothesis 4, we tested model fit for six studies reported in Barclay's dissertation (2009). Figures 14 to 16 show the factor score locations of the model fit for each individual study. Since some of the studies have missing information—we do not have model fit information for all five of the models. The figures present the models for which fit indices were available.

The left panel of Figure 14 shows the results for Igbaria, 1993a, and the right panel shows the results for Igbaria, 1993b. The two are very similar in that they are about in the middle of the space on the X axis (AIC, BIC, chi-square) and relatively low on the Y axis (RMSEA), with very little variation on the Z axis. In other words, for these two studies the CFI index does not differentiate among the five models. None has a good fit.



	Factor 1	Factor 2	Factor 3
Schein	.	.	.
F&B	.	.	.
Bristow	-0.204	-0.329	-0.546
Chapman	-0.184	-0.298	-0.727
Cai	-0.223	-0.468	-0.850

Igbaria, 1993a

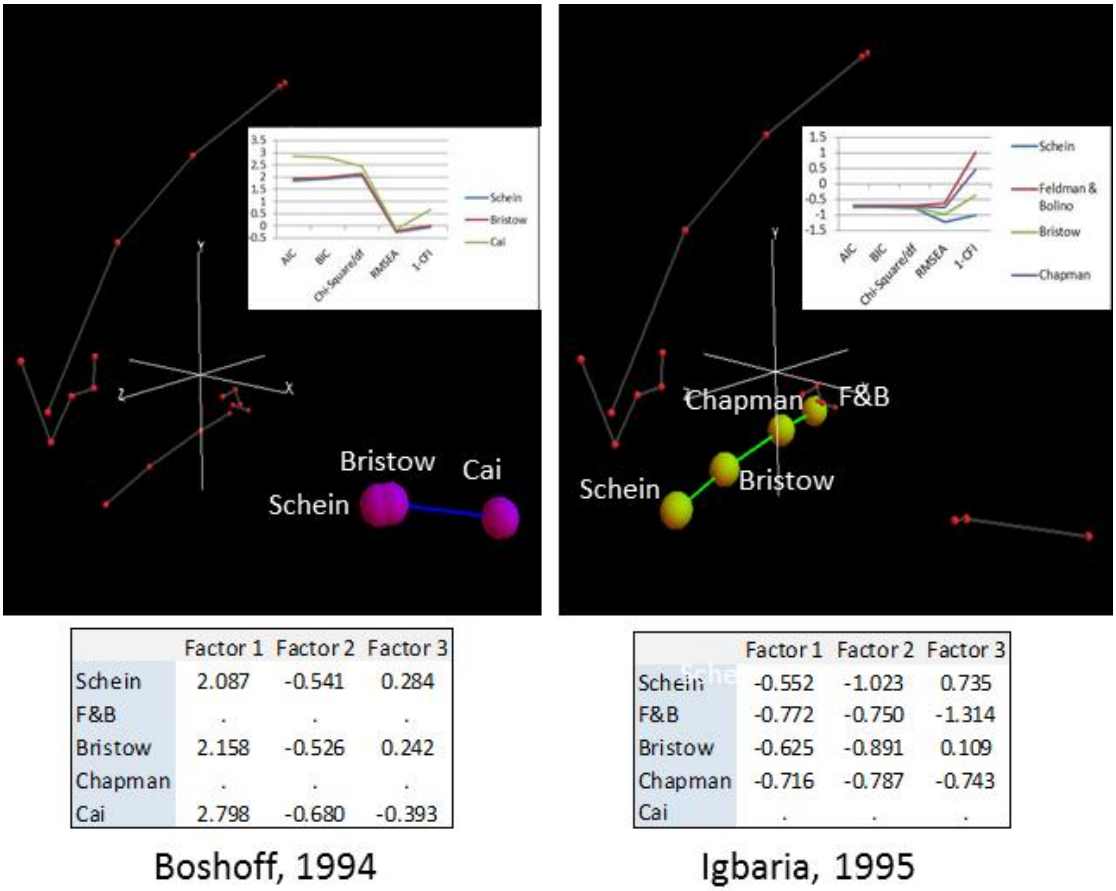
	Factor 1	Factor 2	Factor 3
Schein	.	.	.
F&B	.	.	.
Bristow	.	.	.
Chapman	-0.701	-0.643	-1.290
Cai	-0.740	-0.781	-1.625

Igbaria, 1993b

Figure 14. Factor score comparisons of study A (Igbaria 1993a, left panel) with study B (Igbaria 1993b, right panel). Factor score values are shown in the two tables below each and line graphs of the standardized model-fit statistics are shown in the insets of each figure.

Figure 15 presents the results from the Boshoff 1994 study in the left panel, and from the Igbaria 1995 study in the right panel. The Boshoff data is unique in terms of having a very bad fit on the AIC, BIC, and chi-square indices (far to the right on the X axis). This data also displays some CFI axis variation among the three models, with Schein and Bristow being a better fit (to the front on the Z axis) than the Cai model. In the right panel we see that the Igbaria 1995 data is more like the six dissertation datasets

of Figures 11 to 13 in that it has a good variation among the models on the CFI index (the Z axis), with Schein having the best fit, followed by Bristow, then Chapman, and finally Feldman and Bolino.



	Factor 1	Factor 2	Factor 3
Schein	2.087	-0.541	0.284
F&B	.	.	.
Bristow	2.158	-0.526	0.242
Chapman	.	.	.
Cai	2.798	-0.680	-0.393

Boshoff, 1994

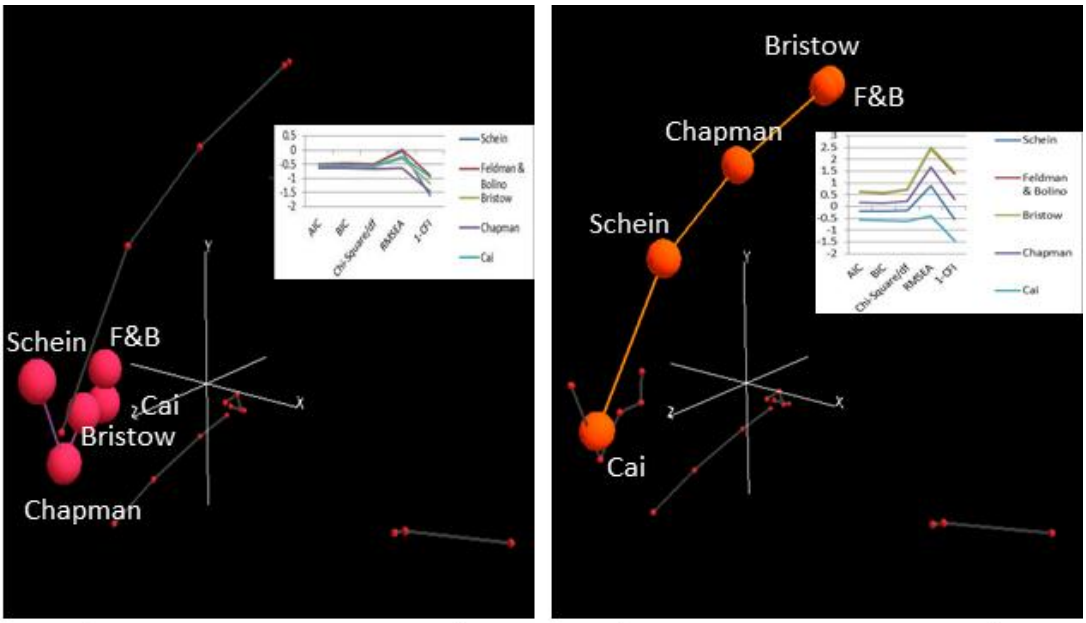
	Factor 1	Factor 2	Factor 3
Schein	-0.552	-1.023	0.735
F&B	-0.772	-0.750	-1.314
Bristow	-0.625	-0.891	0.109
Chapman	-0.716	-0.787	-0.743
Cai	.	.	.

Igbaria, 1995

Figure 15. Factor score comparisons of study A (Boshoff 1994, left panel) with study B (Igbaria 1995, right panel). Factor score values are shown in the two tables below each and line graphs of the standardized model-fit statistics are shown in the insets of each figure.

The Tan 2001 study has the overall best model fit, as shown in the left panel of Figure 16 and it includes data from all five models. All of them are low on the X and Y axes (indicating a relatively good fit on the AIC, BIC, chi-square cluster, and on

RMSEA), and to the front on the Z axis (indicating a good fit on the CFI index). Interestingly, there is very little variation among the five models on the data from this study. On the other hand, there is considerable variation among the models in the data from Hsu 2002, as shown in the right panel of Figure 16. Cai's model works best with data in this study. It has much better model fit on all the five indices compared to the other four models. Feldman and Bolino's model and Bristow's model are very similar and have the worst model fit. Schein's model and Chapman's model have moderate fits with this group of data. It is interesting to note that the datapoint for the Cai model is one of the best all three axes, rivaled only by the Tan data for overall goodness of fit, but that as one goes from the Cai model to the Schein model, to the Chapman model, to the Bristow and Feldmand & Bolino models, the fit becomes successively worse on both RMSEA (upward on the Y axis) and CFI (toward the back on the Z axis.)



	Factor 1	Factor 2	Factor 3
Schein	-0.338	0.349	1.665
F&B	-0.411	0.247	0.895
Bristow	-0.430	-0.012	1.145
Chapman	-0.442	-0.312	1.367
Cai	-0.432	0.000	0.908

Tan, 2001

	Factor 1	Factor 2	Factor 3
Schein	-0.245	1.097	0.733
F&B	0.214	2.328	-0.961
Bristow	0.232	2.360	-1.022
Chapman	-0.051	1.739	-0.005
Cai	-0.423	-0.080	1.393

Hsu, 2002

Figure 16. Factor score comparisons of study A (Tan 2001, left panel) with study B (Hsu 2002, right panel). Factor score values are shown in the two tables below each and line graphs of the standardized model-fit statistics are shown in the insets of each figure.

In the six Barclay studies as in the six datasets of hypothesis 3, overall, none of the five competing career anchor models stands out as the “best” theoretical model. Hypothesis 4 is also confirmed—that model dominance varies across the six studies. Table 7 summarizes the comparisons of model fit for the five competing career anchor models applied to the twelve groups of data both from the dissertation data and also from the previous studies from Barclay. One model seems best with one set of data and

another model with other sets of data. The quest for deciding among the models on the basis of fit seems not to be a productive direction for career anchor research.

Table 7

Summary of Comparisons of Model Fit of Five Competing Models Applied to Six Groups of Data in the Present Study, and Six Groups of Data from Previous Studies of Barclay

Dataset		*Best Model*	*Second*	*Third*	*Fourth*	*Fifth*
Present						
	Type A					
	Young Male	Cai	Bristow	Schein	Chapman	F&B
	Young Female	Cai	Bristow	Schein	Chapman	F&B
	Older	Schein	F&B	Bristow	Cai	Chapman
	Type B					
	Young Male	Chapman	F&B	Cai	Schein	Bristow
	Young Female	F&B	Bristow	Schein	Cai	Chapman
	Older	Chapman	Cai	Schein	Bristow	F&B
Previous						
	Study A	Bristow	Chapman	Cai		
	Study B	Chapman	Cai			
	Study C	Schein	Bristow	Cai		
	Study D	Schein	Bristow	Chapman	F&B	
	Study E	Chapman	Schein	Bristow	Cai	F&B
	Study F	Cai	Schein	Chapman	F&B	Bristow

Note. Type A is the Likert-scale method; Type B is the economic exchange method.

Discussion

Schein is the first person who introduced the term “career anchor”. According to his definition of career anchor, it is “the one thing a person would not give up if forced to make a choice” (Schein, 2006, p. 35). Schein’s career anchor model indicates that every person has only one career anchor which determines his/her career choice (Schein, 2006). However, Chapman demonstrates that people can have more than one career anchor even

though some may be more important than others (2009). Our data in this study support Chapman's claim. Many people have more than one dominant career anchor. There are two possible reasons to explain this phenomenon. At first, people have multiple needs, not only in their daily life, but also in their careers. From the monetary perspective, people want financial security and stability; but from the personal characteristic perspective, people may have other career motivations. This makes the existence of multiple career anchors possible and likely. Secondly, one specific career has multiple characteristics, which fit with people's career motivations. For example, the job as a teacher usually provides both Service/Dedication rewards and also Security/Stability. As a result, a person who has these two career anchors may prefer a job as a teacher when he/she makes a career choice.

In this study we have considered five competing career anchor models. They are from Schein (1987), Feldman and Bolino (1996), Bristow (2004), Chapman (2009), and one created within the present study. One of the questions we set out to answer in the present study is whether one model could be considered to be the "universal" or "best" career anchor model among these five competing models. We found in this study that there is no best model demonstrated. There are three potential explanations for this result. First, career anchors and motivations are too complicated to generalize to a universal rule. Different theoretical models may fit with people from different careers, age groups and gender groups. Second, Schein's original career anchor model (1990a) is a good one which can be used in major populations. Even though many people, such as Feldman and Bolino (1996), Bristow (2004), Chapman (2009), have tried to revise Schein's model, none of them really have the strong theoretical articulation or convincing

data to support the superiority of their model over Schein's. Last but not least, data from every career anchor study are more or less biased regarding the population characteristics. This may cause a lot of variance when testing the model. For example, in Schein's original career anchor model, Autonomy/Independence and Security/Stability are mutually inconsistent (Schein, 1990a). However, if data are collected from participants who are teachers or professors, this inconsistency may not be indicated because the job nature embraces both of the two anchors. Although none of the five competing career anchor models performs the "best", we do find that CFI is the best fit index in differentiating among models. This is consistent with Kline's claim concerning the CFI model fit index (Kline, 1998)

The third question we set out to solve in the present study is that of ostensible psychometric problems in the COI, the career anchor measure created by Schein and DeLong (1982). Chapman argued (2009) that the Likert scale method used by Schein is problematic because it creates bias such as motivational distortion and acquiescence bias. Chapman used a revised COI with paired comparison questions to prevent these biases (2009). However, this also introduces the problem of ipsativity. We set out to create an alternative Likert-scale based method, the "economic exchange method," with the intent that it would solve the acquiescence bias problem of the COI by using a monetary measurement. As predicted, we find that for college age students the method of "economic exchange" creates a greater variance in ratings than the standard Likert-scale method. Presumably, when making economically-based choices, respondents are more prudent. However, we are surprised to find that this increased variance in economic exchange data does not lead to a greater range of correlation coefficients and a better

model fit of Type B (economic exchange) data. On the contrary, Type A (Likert-scale) data has a greater range of correlation coefficients than Type B (economic exchange) data. Apparently something is wrong with our rationale that a greater variance in ratings would lead to a similar increased range in the correlation coefficients. Our findings indicate that Schein's original career anchor measurement using the COI is actually superior to our economic exchange measurement method in creating coherent results. There are several possible reasons for why our economic exchange method did not work well. The 6-point Likert scale we are using in this method spread from giving up no salary to giving up 25% of one's salary. One fourth of one's salary is probably too high to give up even taking highly desired job properties into account. This will cause the participants focus on the lower ratings, giving a "floor effect". Although this new method is successful in correcting the "ceiling effect" caused by scale inflation bias, it does not differentiate the anchor ratings very well as we predicted.

The fourth question we set out to answer is whether older people have clearer career anchors than younger people. We do not find a significant difference between the age groups. There are several possible reasons for this. First, older people do not necessarily have more work experience than younger people. Especially for older females, many of the participants only have at-home work experiences. Second, older people may understand the descriptions of career anchors in a different way from younger people. Because older people have more life experience, not only in work, but also in other aspects of lives, they tend to see more complications and interaction among career motivations. However, younger people, especially college students, may have a simpler perspective when reading the survey questions and thinking about their career

motivations. This simpler way may fit better with the theoretical models. Given our very small sample size for the older group of respondents, this hypothesis should probably be revisited with a more adequate sample.

There are several limitations of this study. The first one is the possibility of a biased and non-representative sample. Because our sample is collected at Brigham Young University, the nature of that population may influence the characteristics of our data. The second limitation is our small sample size for older people. Since our data were recruited through the SONA research system, which made it harder to collect data from non-students, we were not successful in obtaining a large sample of older people. . Given our very small sample size for the older group of respondents, the hypothesis of clearer career anchor structure among older respondents should probably be revisited with a more adequate sample.

Future Research

The economic exchange method could be revised and improved in several ways. First, a pilot study could be conducted before determining the 6-point Likert scale of economic exchange method. This would help researchers know the range of money participants would be willing to give up in exchange for certain desirable characteristics when they make a career choice. A more applicable range in the rating scale could be created based on the results of the pilot test. Second, participants could be asked in an open-ended format how much money they are willing to give (not using a Likert-scale). The wording of the economic exchange method could also be improved. For example, the situation could be described as two jobs, one with the desired property and one without it. The person could then be asked how much additional salary the job without

it would have to have to be equivalent in value. This may be a more effective strategy than asking how much salary one would give up for the desired property.

The last question for discussion is just how useful the career anchor concept is, regardless of the model adopted, and also the related question of how it might be useful in organizational science. Schein claimed that each person has only one career anchor (1974), but that has been demonstrated to be incorrect by a number of other studies including the present one. Feldman and Bolino (1996), Bristow (2004), and Chapman (2009) both tried to create a better model, one that would fit empirical data better than Schein's. However, given the results of this study their arguments for the superiority of their models are not convincing. There is little consistency among the tests of relative model strength, and no compelling evidence favoring one model over another (Barclay, 2009; Chapman, 2009; Feldman, & Bolino, 1996; DeLong, 1982). Relative model fit is very much determined by the dataset on which the models are being tested. On the basis of all that has been demonstrated, it is safe to say that there is no compelling evidence for a universal career anchor model.

Perhaps future work should focus more on a descriptive approach. For example using clustered principal component plots, one could identify different "types" of people who share particular career anchor profiles. These could then be related to the occupations typical of each and the relationship of particular anchor profiles to success in particular occupations. Perhaps empirical descriptions of career anchor profiles that typify demographic and occupational groups would be more useful than trying to fit people to competing models of career anchor structure.

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APPENDIX A

Schein's COI (Part 1) and Economic Exchange COI (Part 2)

Part 1. Original Likert Version of Schein's Career Orientations Inventory (COI)

Instructions: Use the following scale to rate how true each of the 40 items is for you and write the number in the blank.

NEVER OCCASIONALLY OFTEN ALWAYS
1 2 3 4 5 6

___1. I dream of being so good at what I do that my expert advice will be sought continually.

___2. I am most fulfilled in my work when I have been able to integrate and manage the efforts of others.

___3. I dream of having a career that will allow me the freedom to do a job my own way, on my own schedule.

___4. Security and stability are more important to me than freedom and autonomy.

___5. I am always looking for ideas that will permit me to start my own enterprise.

___6. I will feel successful in my career only if I have a feeling of having made a real contribution to the welfare of society.

___7. I dream of a career in which I can solve problems or win in situations that are extremely challenging.

___8. I would rather leave my organization than be put into a job that would compromise my ability to pursue personal/family concerns.

___9. I will feel successful in my career only if I can develop my technical or functional skills to a very high level of competence.

___10. I dream of being in charge of a complex organization and of making decisions that affect many people.

___11. I am most fulfilled in my work when I am completely free to define my own tasks, schedules.

___12. I would rather leave my organization altogether than accept an assignment that would jeopardize my security in that organization.

___13. Building my own business is more important to me that achieving a high-level managerial position in someone else's organization.

___14. I am most fulfilled in my career when I have been able to use my talents in the service of others.

___15. I will feel successful in my career only if I face and overcome very difficult challenges.

___16. I dream of a career that will permit me to integrate my personal, family, and work needs.

___17. Becoming a senior functional manager in my area of expertise is more attractive to me than becoming a general manager.

___18. I will feel successful in my career only if I become a general manager in some organization.

___19. I will feel successful in my career only if I achieve complete autonomy and freedom.

___20. I seek jobs in organizations that will give me a sense of security and stability.

___21. I am most fulfilled in my career when I have been able to build something that is entirely the result of my own ideas and efforts.

___22. Using my skills to make the world a better place in which to live and work is more important to me than achieving a high-level managerial position.

___23. I have been most fulfilled in my career when I have solved seemingly unsolvable problems or won out over seemingly impossible odds.

___24. I feel successful in life only if I have been able to balance my personal, family, and career requirements.

___25. I would rather leave my organization than accept a rotational assignment that would take me out of my area of expertise.

___26. Becoming a general manager is more attractive to me than becoming a senior functional manager in my current area of expertise.

___27. The chance to do a job my own way, free of rules and constraints, is more important to me than security.

___28. I am most fulfilled in my work when I feel that I have complete financial and employment security.

___29. I will feel successful in my career only if I have succeeded in creating or building something that is entirely my own product or idea.

___30. I dream of having a career that makes a real contribution to humanity and society.

___31. I seek out work opportunities that strongly challenge my problem-solving and/or competitive skills.

___32. Balancing the demands of my personal and professional lives is more important to me than achieving a high-level managerial position.

___33. I am most fulfilled in my work when I have been able to use my special skills and talents.

___34. I would rather leave my organization than accept a job that would take me away from the general managerial path.

___35. I would rather leave my organization than accept a job that would reduce my autonomy and freedom.

___36. I dream of having a career that will allow me to feel a sense of security and stability.

___37. I dream of starting up and building my own business.

___38. I would rather leave my organization than accept an assignment that would undermine my ability to be of service to others.

___39. Working on problems that are almost unsolvable is more important to me than achieving a high-level managerial position.

___40. I have always sought out work opportunities that would minimize interference with my personal or family concerns.

Part 2. Economic Exchange Version of Schein's Career Orientations Inventory

Instructions: Estimate how much salary you would be willing to **give up** in order to get a job with the property mentioned in the following sentences? (Assume that you have a salary of $60000 per year)

$0	**$3000**	**$6000**	**$9000**	**$12000**	**$15000 or more**
0%	**5%**	**10%**	**15%**	**20%**	**25%+**
1	**2**	**3**	**4**	**5**	**6**

For example, if you really value autonomy in work, you would be willing to give up a large amount of money (e.g. $15000 or more) in order to get a job with autonomy. If you do not care autonomy at all, you would not give up any money in order to get a job with this property.

Put 1-6 in the blank

1._____ Your expert advice will be sought continually.

2. _____ You will be able to integrate and manage the efforts of others.

3. _____ You will have the freedom to do the job your own way, on your own schedule.

4. _____ You will have a lot of security and stability.

5. _____ You will have chance to start your own enterprise.

6. _____ You will have a feeling of having made a real contribution to the welfare of society.

7. _____ You will have a chance to solve problems or win in situations that are extremely challenging.

8, _____ You will have more freedom to pursue personal/family concerns.

9. _____ You will have a chance to develop your technical or functional skills to a very high level of competence.

10. _____ You will be in charge of a complex organization and of making decisions that affect many people.

11. _____ You will be completely free to define your own tasks and schedules.

12. _____ Your security will not be jeopardized.

13. _____ You will have a chance to build your own business.

14. _____ You will be able to use your talents in the service of others.

15. _____ You will have a chance to face and overcome very difficult challenges.

16. _____ You will be able to integrate your personal, family, and work needs.

17. _____ You will have a chance to become a senior functional manager in your area of expertise.
18. _____ You will have a chance to become a general manager in this organization.
19. _____ You will have a chance to achieve complete autonomy and freedom.
20. _____ You will be able to have a sense of security and stability.
21. _____ You will be able to build something that is entirely the result of your own ideas and efforts.
22. _____ You will have a chance to use your skills to make the world a better place in which to live and work.
23. _____ You will have a chance to solve seemingly unsolvable problems or win out over seemingly impossible odds.
24. _____ You will be able to balance personal, family, and career requirements.
25. _____ You will never be taken out of your area of expertise.
26. _____ You will become a general manager.
27. _____ You have the chance to do the job your own way, free of rules and constraints.
28. _____ You will have complete financial and employment security.
29. _____ You will be successful in creating or building something that is entirely your own product or idea.
30. _____ You will have a chance to make a real contribution to humanity and society.
31. _____ You will be strongly challenged in your problem-solving and/or competitive skills.
32. _____ You will be able to balance the demands of your personal and professional lives.
33. _____ You will be able to use your special skills and talents.
34. _____ You will not be taken away from the general managerial path.
35. _____ Your autonomy and freedom will never be reduced.
36. _____ You will feel a sense of security and stability.
37. _____ You will have a chance to startup and build your own business.
38. _____ Your ability to be of service to others will never be undermined.
39. _____ You will have a chance to work on problems that are almost unsolvable.
40. _____ The interference with your personal or family concerns will be minimized.

APPENDIX B

Profiles for Schein's Eight Career Anchors

Technical/Functional Competence – Prefers advancement only in technical or functional area of competence.

General Managerial Competence – Prefers to harness people together to work on common goals.

Autonomy/Independence – Prefers work situations which are free of organizational constraints; wants to work on own pace and own schedule.

Security/Stability – Prefers job security; wants to set long term attachment to one position.

Entrepreneurial/Creativity – Prefers to create something new; interests in initiating new enterprises than managing established ones.

Service/Dedication – Prefer to improve the world and society; wants to contribute self to the society.

Pure Challenge – Prefer to overcome major obstacles and solve challenging problems; likes competition.

Lifestyle – Prefer to balance career with life.

Source: Schein, E. H. 1990. Career Anchors: Discovering Your Real Values. San Diego, CA: Pfeiffer & Company.

APPENDIX C

Correlation Matrices of Six Groups of Participants from the Present Study

Career Anchors	Tec	Mng	Aut	Sec	Ent	Ser	Chl	Lif
Type A: Young Male *N*=135								
Tec	1.000							
Mng	.341	1.000						
Aut	.381	.304	1.000					
Sec	.227	.150	-.192	1.000				
Ent	.325	.384	.698	-.056	1.000			
Ser	.286	.034	.252	.128	.199	1.000		
Chl	.514	.242	.408	.130	.394	.400	1.000	
Lif	.346	.013	.220	.417	.213	.555	.387	1.000
Type A: Young Female *N*=175								
Tec	1.000							
Mng	.374	1.000						
Aut	.428	.449	1.000					
Sec	.229	.137	-.160	1.000				
Ent	.425	.416	.633	-.002	1.000			
Ser	.179	-.127	.152	.130	.118	1.000		
Chl	.549	.357	.343	.171	.329	.303	1.000	
Lif	.226	-.154	.089	.272	.015	.455	.203	1.000
Type A: Older *N*=20								
Tec	1.000							
Mng	.058	1.000						
Aut	.449	.485	1.000					
Sec	.098	-.218	-.415	1.000				
Ent	.688	.444	.582	-.056	1.000			
Ser	.730	.227	.559	.275	.594	1.000		
Chl	.589	.427	.453	.272	.779	.826	1.000	
Lif	.177	.142	.310	.401	.170	.595	.482	1.000

Type B: Young Male *N*=135

Tec	1.000							
Mng	.531	1.000						
Aut	.580	.360	1.000					
Sec	.586	.360	.433	1.000				
Ent	.537	.507	.616	.313	1.000			
Ser	.570	.304	.481	.495	.294	1.000		
Chl	.757	.510	.489	.367	.471	.532	1.000	
Lif	.549	.203	.545	.563	.297	.674	.389	1.000

Type B: Young Female *N*=175

Tec	1.000							
Mng	.648	1.000						
Aut	.628	.412	1.000					
Sec	.466	.376	.542	1.000				
Ent	.507	.406	.585	.270	1.000			
Ser	.442	.124	.545	.431	.386	1.000		
Chl	.577	.541	.467	.315	.528	.542	1.000	
Lif	.444	.156	.564	.549	.255	.546	.319	1.000

Type B: Older *N*=20

Tec	1.000							
Mng	.849	1.000						
Aut	.831	.574	1.000					
Sec	.850	.626	.851	1.000				
Ent	.786	.680	.801	.816	1.000			
Ser	.895	.776	.724	.841	.660	1.000		
Chl	.762	.866	.364	.496	.451	.772	1.000	
Lif	.905	.724	.803	.912	.709	.905	.692	1.000

APPENDIX D

Original Correlation Matrices of Six Studies Taken from Barclay's Dissertation (2009)

Career Anchors	Tec	Mng	Aut	Sec	Ent	Ser	Chl	Lif
Study A: Igbaria 1993a	*N*=396							
Tec	1.000							
Mng	-.220	1.000						
Aut	.200	.170	1.000					
Sec	.280	-.160	.050	1.000				
Ent	.260	.300	.450	-.210	1.000			
Ser	.040	.070	.230	.020	.120	1.000		
Chl	.050	.030	.240	-.070	.270	.110	1.000	
Lif	.140	-.040	.350	.160	.200	.270	.050	1.000
Study B: Igbaria 1993b	*N*=161							
Tec	1.000							
Mng	-.250	1.000						
Aut	.130	.140	1.000					
Sec	.170	-.210	.020	1.000				
Ent	.220	.300	.310	-.170	1.000			
Ser	.020	-.090	.240	.030	.060	1.000		
Chl	.080	.070	.270	-.070	.240	.100	1.000	
Lif	.050	-.030	.230	.220	.080	.190	.060	1.000
Study C: Boshoff 1994	*N*=1791							
Tec	1.000							
Mng	-.100	1.000						
Aut	.050	.000	1.000					
Sec	.290	.080	-.090	1.000				
Ent	-.100	.380	.370	-.180	1.000			
Ser	.280	.130	-.140	.260	-.160	1.000		
Chl	-.040	.590	.140	.040	.420	.050	1.000	
Lif	.170	.070	.170	.030	.080	.220	.010	1.000

Study D: Igbaria 1995 *N*=112

Tec	1.000							
Mng	-.270	1.000						
Aut	.050	-.020	1.000					
Sec	.260	-.010	-.100	1.000				
Ent	-.070	.340	.360	-.160	1.000			
Ser	.120	.020	.030	.120	.050	1.000		
Chl	.170	.040	.240	-.020	.190	.140	1.000	
Lif	.080	-.210	.300	.030	.070	.010	-.040	1.000

Study E: Tan 2001 *N*=160

Tec	1.000							
Mng	.420	1.000						
Aut	.490	.490	1.000					
Sec	.280	.350	.190	1.000				
Ent	.400	.570	.650	.310	1.000			
Ser	.560	.220	.340	.240	.320	1.000		
Chl	.650	.480	.480	.260	.550	.580	1.000	
Lif	.360	.200	.380	.360	.180	.370	.280	1.000

Study F: Hsu 2003 *N*=153

Tec	1.000							
Mng	.440	1.000						
Aut	.430	.370	1.000					
Sec	.360	.290	.280	1.000				
Ent	.310	.530	.500	.190	1.000			
Ser	.450	.480	.330	.490	.370	1.000		
Chl	.410	.420	.460	.430	.400	.550	1.000	
Lif	.450	-.120	.370	.450	.440	.560	.500	1.000

APPENDIX E

Factor Scores of Five Models Applied to Six Datasets of This Dissertation and Six Studies from Barclay's Dissertation.

Six Datasets of this Dissertation

dataset	model	factor 1	factor 2	factor 3
AYM	Schein	.18153	-.54359	-.79518
AYM	F&B	.97428	.12517	-1.91829
AYM	Bristow	.04958	-.66231	-.61115
AYM	Chapman	.77762	-.03084	-1.64096
AYM	Cai	-.12542	-.91412	-1.02039
AYF	Schein	.60351	-.52215	-.74596
AYF	F&B	1.02251	-.19519	-1.26481
AYF	Bristow	.06788	-.96623	-.12510
AYF	Chapman	.92584	-.27436	-1.14268
AYF	Cai	-.12612	-1.21864	-.45283
AO	Schein	-2.06200	-1.07163	.93366
AO	F&B	-1.62972	-.12186	-.38237
AO	Bristow	-1.59809	-.05791	-.49316
AO	Chapman	-1.41971	.31170	-1.07627
AO	Cai	-1.68493	-.17618	-1.23788
BYM	Schein	.11426	-.55605	1.19461
BYM	F&B	-.08039	-.73665	1.32112
BYM	Bristow	.45752	-.24397	.95240
BYM	Chapman	-.50546	-1.14110	1.60264
BYM	Cai	-.04563	-.78722	.95368
BYF	Schein	1.11389	-.04373	.99415
BYF	F&B	.67666	-.39826	1.24421
BYF	Bristow	.87972	-.22821	1.11771
BYF	Chapman	2.10903	.74315	.40679
BYF	Cai	1.44954	.08564	.40887
BO	Schein	-.32686	2.11305	.34242
BO	F&B	-.08756	2.51524	.01465
BO	Bristow	-.23921	2.25972	.22329
BO	Chapman	-.85360	1.18912	1.03810
BO	Cai	-.61865	1.54811	.15873

Six Studies from Barclay (2009)

study	model	factor 1	factor 2	factor 3
Igbaria '93a	Schein	.	.	.
Igbaria '93a	F&B	.	.	.
Igbaria '93a	Bristow	-.20365	-.32944	-.54595
Igbaria '93a	Chapman	-.18447	-.29837	-.72672
Igbaria '93a	Cai	-.22326	-.46758	-.85033
Igbaria '93b	Schein	.	.	.
Igbaria '93b	F&B	.	.	.
Igbaria '93b	Bristow	.	.	.
Igbaria '93b	Chapman	-.70145	-.64296	-1.28958
Igbaria '93b	Cai	-.74030	-.78126	-1.62459
Boshoff '94	Schein	2.08700	-.54090	.28391
Boshoff '94	F&B	.	.	.
Boshoff '94	Bristow	2.15805	-.52592	.24186
Boshoff '94	Chapman	.	.	.
Boshoff '94	Cai	2.79765	-.68014	-.39339
Igbaria '95	Schein	-.55154	-1.02327	.73501
Igbaria '95	F&B	-.77248	-.75026	-1.31434
Igbaria '95	Bristow	-.62524	-.89064	.10907
Igbaria '95	Chapman	-.71579	-.78730	-.74307
Igbaria '95	Cai	.	.	.
Tan '01	Schein	-.33757	.34909	1.66471
Tan '01	F&B	-.41111	.24742	.89546
Tan '01	Bristow	-.42951	-.01170	1.14510
Tan '01	Chapman	-.44181	-.31163	1.36680
Tan '01	Cai	-.43237	.00020	.90775
Hsu '02	Schein	-.24513	1.09702	.73333
Hsu '02	F&B	.21426	2.32846	-.96071
Hsu '02	Bristow	.23228	2.35971	-1.02214
Hsu '02	Chapman	-.05090	1.73928	-.00530
Hsu '02	Cai	-.42267	-.07979	1.39311

Note. Factor 1 is defined by the three confirmatory factor analysis test indices of AIC, BIC, and chi-square/df. Factor 2 corresponds to RMSEA, and factor 3 corresponds to CFI.