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Factors Influencing Career Decision Making in Adolescents and Adults

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Abstract

The structure of the Career Decision-making Difficulties Questionnaire (CDDQ, Gati, Osipow, & Krausz, 1996) was validated and compared across two age cohorts using Structural Equation Modelling. One hundred and twenty-one upper high school students (78 girls, 43 boys – mean age 15.92 years) participated in Study 1, while 127 adults (86 females, 41 males – mean age 33.44 years) completed the survey for Study 2. While the model confirmed the multidimensional structure of the CDDQ, five first-order factors provided a better fitting model than the three higher-order factors postulated by Gati et al. The model fitted both groups, suggesting that a common pattern of difficulties was experienced by people of different ages, although older career deciders reported fewer difficulties with Internal Conflicts and Conflicts with Others than did students.

Factors influencing Career Decision Making in Adolescents and Adults

Much of the research into career decision making (CDM) has represented the construct as a developmental task of adolescence (Crites, 1973; Super & Forrest, 1972). However, as changes in the workplace force us to revamp our concepts of long-term, stable patterns of jobs and careers, CDM is increasingly being seen as an ongoing part of one's involvement in the world of work. These changes require us to ascertain how well a construct that was originally defined and measured in the context of young people making career entry-level choices relates to the CDM behaviour of older workers faced with mid-career choice opportunities or dilemmas. There is also a need to re-examine the nomological framework of CDM, to determine its relationship with other constructs such as vocational interests, personality, and intelligence. The research reported here aims to address both these issues. Study 1 was intended to develop and test a model that brought together a wide range of variables considered to be important in CDM, while Study 2 looked at that model's applicability to an older population engaged in career shift.

The notion of CDM has evolved from its original representation as a static, one-off event to its current conceptualisation as a dynamic construct incorporating both readiness and outcome variables. The role of vocational psychology has always been to help people make good career decisions (Savickas, 1995), and while this continues to be the main function of career counselling and the main focus of career development theory, there have been many changes in the way this task has been approached and conceptualised since the beginning of the 20th century. At that time Parsons (1909) defined three key requirements of career deciders: self-knowledge, knowledge of work opportunities and conditions, and the ability to combine rationally the two sets of information. Parsons' work provided the basis for the matching or

trait-and-factor approach, which was facilitated by the development in psychometric technology and the associated advances in the psychology of individual differences following the two World Wars (Dunnette & Borman, 1979; Patton & McMahon, 1999). The individual differences approach received a further major boost through the very influential person-environment fit model of John Holland (1959, 1985).

Osipow, Carney, and Barak (1976) presented a different approach to understanding the career process. Rather than investigating general concepts such as career maturity, they directed their focus to career decision making (CDM), looking at barriers preventing people from making career decisions. Their 19-item Career Decision Scale investigated aspects of indecision, and while this scale was well-accepted and widely used over a number of years, there were lingering criticisms about the uncertainty of its factor structure and the complex nature of its items. A recent revision addressed these shortcomings and produced the Career Decision-making Difficulties Questionnaire (CDDQ; Gati, Osipow, & Krausz, 1996).

Other scales, representing a variety of different theoretical viewpoints, have been developed and used to measure CDM. One of these many scales is the Career Beliefs Inventory (Krumboltz, 1991), which is based on the premise that people's career choices depend on the assumptions and generalisations they make about themselves and the world of work. Sampson, Peterson, Lenz, Reardon, & Saunders (1996) developed another cognitively based measure called the Career Thoughts Inventory, while Hartung (1995) used a Gestalt model as the basis for the Decisional Process Inventory.

The Relationship between Personality, Interests, and CDM

A common theme in most scales is the measurement of dispositional variables, skills/knowledge variables, and external environmental influences on CDM (Albion,

2000). Individual traits measured include aspects of general motivation (Crites, 1978; Holland, Daiger, & Power, 1980; Krumboltz, 1994; Super & Forrest, 1972), undecidedness (Osipow, Carney, Winer, Yanico, & Koschier, 1987), decision anxiety (Sampson et al., 1996), and locus of control (Taylor, 1982). Recent research has shown consistent relationships between personality constructs and interest categories (Wright, Reardon, Peterson, & Osborn, 2000), with Gottfredson, Jones, and Holland (1993) finding that Extraversion is associated with Social and Enterprising interests, whilst Openness is related to Investigative and Artistic interests, and Conscientiousness is related to Conventional interests. Costa, McCrae, and Holland (1984) had earlier reported that people with high scores on Openness were more likely to pursue Artistic and Investigative occupations.

There are also some data indicating relationships between personality and CDM. Bansberg and Sklare (1986) found that introverted students reported more decision difficulties than those who were extraverted. Costa et al. (1984) reported that Neuroticism could be related to occupational difficulties such as job dissatisfaction or anxiety, the latter being already noted as an anticipated source of career decision difficulties (Sampson et al., 1996). Osipow (1999) reported an unpublished study of decisiveness conducted by Haraburda (1998), which suggested links between undecidedness and all five personality dimensions. Haraburda found that high scores on decisiveness were associated with low Neuroticism and fewer psychological symptoms, while low scores on decisiveness were associated with low scores on Extraversion, Openness, Agreeableness, and Conscientiousness. Despite the possibility that some of these findings were influenced by social desirability and other biases affecting self-report measures, it is likely that the inclusion of personality variables would enhance the predictive power of the CDM model.

Career interests are usually expressed as behaviours or actions, and are a means by which people attain their values and meet their needs (Super, 1995). There is some evidence that people with different interests approach CDM in distinctively different ways and with varying degrees of success. Holland and Nichols (1964) found that students with creative interests appeared to exhibit high degrees of career indecision, as did students with characteristics conducive to achievement. Holland, Gottfredson, and Power's (1980) finding that Conventional and Realistic types had low scores on a Vocational Identity scale suggested that they may be less effective decision makers than Social types who, according to Holland (1973), were more insightful and therefore likely to be competent decision makers. These findings suggest that people's interest type will predict their decisional status. In the present study, it was therefore hypothesised that Artistic, Conventional, and Realistic types were likely to demonstrate more indecision, while those with more person-oriented interests such as Social and Enterprising types should be more decided. The outcome for Investigative types was less easy to predict on the basis of previous research. While it might be assumed that they would be more undecided because of their open-minded approach, their insightfulness may provide a counter influence.

Influence of Gender Stereotypes

According to Gottfredson's (1996) theory of Circumscription and Compromise, career aspirations are circumscribed from early childhood based on gender-stereotyped notions of what careers are appropriate. If these stereotyped ideas remain unchallenged and unchanged as the child reaches maturity, then they will continue to impact on CDM. The circumscription of career possibilities limits the number of options under consideration, leading to a faster decision being made. It is also likely that such deciders will be reasonably confident of their choice, consisting

as it does of schema-consistent information. However, if there is exposure to “non-traditional” career opportunities, the information may improve the quality of decisions, but it is also likely to prolong the CDM process as people include options that had previously been excluded. It is therefore hypothesised that people who adhere to gender stereotypes will be less undecided than those who do not.

CDM and Intelligence

The modern paradigm of intelligence differentiates the notion of intelligence-as-typical performance from the notion of intelligence-as-optimal performance (Ackerman & Heggestad, 1997). Whereas tests designed to assess intelligence have primarily focused on the latter and have attempted to insulate the construct from any possible educational, social or environmental influences, measures of intelligence-as-typical performance approach the task of assessing intelligence from the different perspective of trying to understand how a person is likely to perform in a variety of situations and circumstances. As interests and personality are conceptualised and measured in terms of typical performance, this new perspective has encouraged and enabled researchers such as Ackerman and his colleagues to investigate the overlap between intelligence and personality, and intelligence and interests. Through their research, they have identified four trait-complexes: (a) Social, which consists of Enterprising and Social interests, Extraversion, Social Potency, and Well-Being; (b) Clerical/Conventional, comprising Perceptual Speed, Conventional interests, Control, Conscientiousness, and Traditionalism; (c) Science/Math, which consists of Mathematical Reasoning, Visual Perception, and Realistic and Investigative interests; and (d), Intellectual/Cultural, made up of Investigative and Artistic interests, Crystallised Intelligence, Ideational Fluency, Absorption, Typical Intellectual Engagement, and Openness.

While the trend in career development theory has been away from the trait-and-factor approach based on the individual career decider to a more general, developmental and environmental approach, the emergence of this new paradigm for intelligence suggests that the time may be right to reconsider careers from an individual differences perspective. The integrative approach of this study will follow the tenor of Ackerman and Heggstad (1997) and will include measures of general intellectual functioning, personality, and interests. Trait clusters will be represented in the structural equation model as correlated variables.

Outcome Measures of CDM

An investigation of the decision making process necessarily involves consideration of the quality of the decision. However, one can only adjudge whether a career decision was “good” or “bad” in the long term, so any attempt to determine the efficacy of an individual’s decision at the time it is taken would be a futile endeavour. While prescriptive theories of decision making suggest that some methods are objectively better than others, in reality, the value of decision making ultimately comes down to the subjective and individual appraisal of the person making the choice. On these grounds and in the absence of any reliable or defensible objective measures, we therefore followed the methodology of the CDDQ (Gati, Osipow, et al., 1996) in using participants’ own subjective ratings of their experience of the decision making process as the outcome measure. An individual’s involvement in the process of deciding on his or her career and study plans would therefore be measured by (a) level of decidedness, (b) satisfaction with that level of decidedness (or undecidedness), and (c) degree of confidence in the decision.

Aims

The integrative approach of the following studies will incorporate aspects of decision theory, personality theory, and notions of intelligence in the development and testing of a structural equation model (SEM) that will explain variance in the outcome variable, career decision status. The CDDQ (Gati, Osipow, et al., 1996) will form the basis of the model, with additional constructs including personality traits, career interests, intelligence, and gender-role stereotyped attitudes. A structural model will be proposed and tested on a sample of young people in Study 1 and an adult sample in Study 2.

The Conceptual Model

When using SEM, Hoyle and Panter (1995) recommended the presentation of a conceptual model outlining the set of variables and their relationships before presentation of the full statistical model. They advised against presenting a full model incorporating all indicator variables, suggesting instead the introduction of a simpler representation of the constructs and theories involved without adding the extra complication of multiple indicators, notation for path diagrams, and the like. To demonstrate graphically the relationships to be evaluated, the conceptual model incorporating the hypothesised relationships among variables is shown in Figure 1. In this simplified model, the three indicators influencing and influenced by “difficulties” appear as single variables (Lack of Readiness, Lack of Information, and Inconsistent Information), rather than as latent variables having their own multiple indicators (items of the CDDQ).

Insert Figure 1 about here

The two latent variables presented in Figure 1 are CDM Difficulties and CDM Status, each of which has multiple indicators. The Status variable is implied by the shared variance of the observed variables, Undecidedness, Satisfaction, and Confidence. The relationships among the variables are represented by pathways leading from the latent variable to its indicators, which is the pattern of relationships most generally associated with latent variables in SEM.

However, the variable, Difficulties, is presented as a composite variable consisting of multidirectional influences. Gati, Krausz, and Osipow (1996), in their development of the CDDQ, differentiated two separate phases of the CDM process – one phase prior to the process, and the other during the process. They allocated items in their taxonomy of difficulties to each, seeing Lack of Readiness issues impacting prior to the process, with Lack of Information and Inconsistent Information having effect during the process. This suggested that Lack of Readiness, which defined pre-existing characteristics of the decision makers, could be represented as a cause of CDM difficulties rather than as an effect or simply a covariate. The latent variable, Difficulties, was represented as a complex variable being influenced by Lack of Readiness and then in turn exerting influence on the two marker variables, Lack of Information, and Inconsistent Information. MacCallum and Browne (1993) presented a similar case where they defined a model by identifying some of their latent variables not as constructs defined by manifest variables, but as composite variables which were a linear combination of their observed causal indicators. In order to specify this combination of reflective and formative elements in a model, there were a number of specific conventions that needed to be observed. One of these was that any indicators that were designated as causal should be represented as exogenous manifest variables with no paths leading to them (MacCallum & Browne). Their influence was modelled

by drawing the path to their composite variable. Using these guidelines, the model was specified to indicate that Lack of Readiness exerted influence on the latent variable, Difficulties, which was an unobserved variable implied by the covariance of Lack of Information and Inconsistent Information.

Individual difference variables including personality, interest, and intelligence, were grouped according to the trait clusters suggested by Ackerman and Heggstad (1997). The role of gender stereotyped attitudes was modelled by the pathway from the variable measuring sex-type to CDM Status. All variables are posited as exerting influence on the latent variables rather than on individual indicators. A full description of the derivation of the CDDQ part of this model is presented in a separate paper (Albion & Fogarty, 2001).

Study 1

Method

Participants

One hundred and twenty-one students (78 girls and 43 boys) from Years 11 and 12 at a regional Queensland school participated in Study 1. The mean age was 15.75 years ($SD = .86$) for the girls and 16.20 years ($SD = .80$) for the boys. Seventy-eight of the students were in Year 11, 42 were in Year 12, and one student on an accelerated learning program was in Year 10. The sample was an accidental sample of students who volunteered to complete the surveys during regular class periods.

Materials

The Career Decision-making Difficulties Questionnaire (CDDQ).

The CDDQ (Gati, Osipow, et al., 1996) consists of introductory questions seeking demographic data and a general overview of level of career indecision, including specific questions about level of undecidedness, satisfaction with decision

status, and confidence in current choice. These items were used as the outcome measures contributing to the latent variable, Status. Then follow 44 statements of attitudes to and beliefs about career decision making (CDM) to which respondents are asked to indicate their level of agreement on a nine-point scale, ranging from 1 – “Does not describe me” to 9 – “Describes me well”.

The CDDQ differentiates three categories of difficulty – Lack of Readiness to make a career decision, Lack of Information, and Inconsistent Information. These three categories are further subdivided into a number of subscales. Lack of Readiness incorporates Lack of Motivation (3 items), Indecisiveness (4 items), and Dysfunctional Myths (3 items). The second category, Lack of Information, is subdivided into Lack of Knowledge about the Process (3 items), Lack of Knowledge about the Self (8 items), Lack of Knowledge about Occupations (4 items), and Lack of Knowledge about How to Access Additional Sources of Information (2 items). The third category, Inconsistent Information, consists of Unreliable Information (6 items), Internal Conflicts (7 items), and External Conflicts (4 items). The scale also yields a total score which is an indication of the severity of difficulties being faced by an individual respondent.

Preliminary administration of the CDDQ (Gati, Krausz, et al., 1996) has shown that while two of the subscales have good internal consistency (Inconsistent Information, $\alpha = .89$, and Lack of Information, $\alpha = .95$), the Lack of Readiness scale ($\alpha = .63$) has moderately low reliability. Overall reliability of the scale was reported to be .94. The multidimensionality of the scale was established and verified using the ADDTREE cluster analysis algorithm (Gati, Krausz, et al., 1996; Gati, Osipow, Krausz, & Saka, 2000; Osipow & Gati, 1998).

The International Personality Item Pool (IPIP) Five-Factor Domain Scale.

The IPIP Five-Factor Domain Scale (Goldberg, 1997) consists of items that define the five personality domains: Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). Each domain is measured by twenty items. Respondents indicate on a five-point Likert scale the extent to which they agree with each item. Average alpha coefficients are about .80, and the average correlation between the IPIP scales and the NEO scales (Costa & McCrae, 1991) is .73, or .94 when corrected for attenuation due to the unreliabilities of the two scales. As this test was developed and normed on an adult sample (Goldberg, 1997), it was decided to administer the items to a focus group of five young people aged between 15 and 17, to assess its suitability for use with this population. Some minor modifications were subsequently made to some items in order to adapt them to the vernacular and circumstances of Australian youth.

Shipley Institute of Living Scale.

The Shipley Institute of Living Scale (Zachary, 1991) was used to provide a measure of participants' general intellectual functioning. The scale consists of two subtests, Vocabulary and Abstraction, which incorporate some of the constructs that Ackerman and Heggestad (1997) included in their Intellectual/Cultural trait complex, crystallised intelligence and ideational fluency.

Zachary (1991) found the test to be internally consistent ($\alpha = .92$) and temporally stable. Test-retest coefficients ranged from .62 to .82. Its validity was established by the high correlations reported in studies conducted between 1946 and 1986 which demonstrated consistent relationships between Shipley Total Raw Score and Full Scale IQ scores on the Wechsler-Bellevue Intelligence Scale (Wechsler, 1939) (coefficients range from .68 to .79); Full Scale IQ scores on the Wechsler Adult

Intelligence Scale (Wechsler, 1955) (coefficients range from .73 to .90); and Full Scale IQ scores on the Wechsler Adult Intelligence Scale – Revised (Wechsler, 1981) (coefficients range from .74 to .85). The test is timed, with respondents being given 10 minutes to complete the 40 multiple choice vocabulary questions, and a further 10 minutes for the 20 items in the abstract reasoning section.

Interest Determination, Exploration and Assessment System (IDEAS) Interest Inventory.

The IDEAS Interest Inventory (Johansson, 1990) is a pencil and paper test designed to assess people's preferences for a range of activities and interests. Respondents are asked to indicate on a five point Likert scale their interest in each of the 128 activities included in the inventory. There are eight items for each of 16 categories, which can be reorganised to represent Holland's (1973) six occupational types.

A review of the test's psychometric properties (Miller & Hoffbauer, 1994) indicated good validity and good internal consistency for each subscale (ranging from .80 to the low .90s). Test-retest reliability is generally good, with correlations over periods of one week, two weeks, and 30 days being .75 and above. As there are considerable published data from career-related research employing Holland's types, IDEAS scores in this study were converted to Holland's six (R-I-A-S-E-C) categories.

Personal Attributes Questionnaire (PAQ).

The short 24-item form of the PAQ (Spence & Helmreich, 1978; Spence, Helmreich, & Stapp, 1974) was used in this study. Each item consists of a pair of contradictory statements, such as "Not at all aggressive" – "Very aggressive". Respondents mark on a five-point Likert scale, the description which they feel best represents them. There are three subscales: Masculinity (M), Femininity (F), and

Masculinity-Femininity (M-F). Reliability data (Spence & Helmreich) indicate that these subscales are internally consistent, with alpha values of .85, .82, and .78 being reported for the M, F, and M-F scales respectively. Spence (1983) suggested categorising respondents by gender-type using a median split method. Masculine types are defined as those who score above the median on the M scale and below the median on the F scale, Feminine types as those scoring high on F and low on M, Androgenous as those who are high on both, and Undifferentiated as those scoring low on both.

Procedure

Participation was encouraged by offering students individual written feedback on their personality profiles, career interests, and CDM difficulties. The first author personally explained and administered the tests to class groups of students over a period of three days. Students completed the tests in 50 to 60 minutes.

Results

Descriptive Statistics

Over 70% of students indicated that they were slightly or very undecided about their career choice, while most (84.3%) rated their satisfaction with their level of decidedness as moderate to high, and 86.6% rated their confidence in their current career choice as moderate to high. In other words, although these high school students were undecided about careers, they were not unduly worried by their indecision. Highest mean CDDQ scores were obtained on Dysfunctional Myths (4.88 out of 9), Indecisiveness (4.38) and the four Lack of Information subscales (3.88 to 4.08). Lowest scores were recorded for External Conflicts (2.43) and Lack of Motivation (2.89).

Before proceeding with the confirmatory analysis of the model, reliability coefficients were calculated for the instruments used in the study, and were found to correspond well with those reported by the authors of the various measures. Most scales demonstrated very good internal consistency, except for the Lack of Readiness scale of the CDDQ ($\alpha = .62$), and two of the three scales of the PAQ. Lack of Readiness had demonstrated similarly relatively poor alpha coefficients in previous validation studies (Gati et al., 2000; Osipow & Gati, 1998), which suggested that the subscale structure of the CDDQ warranted further investigation. This was undertaken as part of the evaluation of the measurement model specifying the pattern by which each of the test items loads onto the subscales (Albion & Fogarty, 2001).

Moderately low alphas for the Masculinity ($\alpha = .74$) and Masculinity-Femininity ($\alpha = .67$) subscales of the PAQ suggested that the scale may no longer reliably measure the constructs for which it was designed. Factor Analysis also identified problems with some items, and while it was decided not to exclude the PAQ from the study at this point, the problems were noted and were taken into consideration when interpreting results. Using the median split method, 19 girls (24.36% of all girls) were classified as Feminine type and 9 boys (20.94% of all boys) as Masculine type. The majority of the sample were Undifferentiated or Androgenous. The categorical “sextype” variable was defined by dividing the sample into two subgroups based on sex matched gender-type. Feminine-typed females and Masculine-typed males formed one group and all others formed the second group.

Correlations

While structural modelling in AMOS uses the analysis of covariances (Arbuckle, 1997), Hoyle and Panter (1995) recommended the reporting of correlational data to indicate the basic relationships of elements within the model. The

correlation matrix showing relationships among the various measures is presented in Table 1.

Insert Table 1 about here

The three categories of difficulties that make up the subscales of the CDDQ were all positively and significantly correlated with each other. Coefficients ranged from .56 to .74 ($p < .01$). The three outcome variables, Confidence, Undecidedness, and Satisfaction, were also significantly intercorrelated, with correlations ranging upwards from -.72 ($p < .01$). The categories of difficulties exhibited significant correlations with the three outcome variables, being positively related with Undecidedness, and negatively related with Satisfaction and Confidence. While sex was not related to any of the CDM variables, scores on the Masculine scale of the PAQ were significantly correlated with both decision difficulties and outcomes. Four of the five personality dimensions exhibited high correlations with most CDM difficulties and outcomes, and it appeared that relationships between scores on the Masculine scale and the CDM variables were more readily explained by the high correlation between Masculine-type and these personality dimensions, than by considering them as gender-related influences. To test this assumption, partial correlations were obtained for the six decision difficulties and outcome variables and the three gender-type scores, while controlling for the five personality factors. Of the 18 correlations calculated, only the one between Masculine-type and undecidedness ($r = -.30$, $p < .01$) remained significant at the .05 level when the influence of personality was accounted for in this way. More current research on gender stereotypes has suggested that the construct of masculinity might be better defined as instrumentality,

self-assertiveness, or dominance (Golombok & Fivush, 1995). These data tended to support this view, and it was adjudged that the gender-typed variables were likely to add little to the model of career decidedness that would not be contributed by the personality constructs.

This study provided support for previous research findings (e.g., Costa et al., 1984; Gottfredson et al., 1993; Wright et al., 2000), that strong relationships exist among interest and personality variables. Extraversion was associated with Social and Enterprising interests, and Openness was associated with all interest categories except Conventional. Agreeableness exhibited a strong relationship with Social interests ($r = .58, p < .01$), and a moderately strong relationship with Artistic interests ($r = .28, p < .01$). Few relationships were found among CDM variables and interest categories, although Conventional interest was positively related to Lack of Information and Inconsistent Information. Those with Investigative interests were more confident of their career choice and reported fewer difficulties due to Inconsistent Information, and students with Social interests reported more problems due to Lack of Information. Intelligence was uncorrelated with decision outcomes, but was negatively related to Inconsistent Information ($r = -.20, p < .05$).

The more detailed structure of the CDDQ as proposed by Gati, Krausz, et al. (1996) was then tested by SEM using the Maximum Likelihood (ML) method of estimation with the AMOS 3.6 program (Albion & Fogarty, 2001). Gati, Krausz, et al.'s (1996) hierarchical cluster structure suggested a third-order general factor (Difficulties), and three second-order factors (Lack of Readiness, Lack of Information, and Inconsistent Information) which were further composed of three, four, and three primary factors respectively. However, SEM analysis indicated that for these data, a simplified model consisting of five item parcels provided a better fit. The

five factors comprising the latent variable, Difficulties, were Lack of Motivation, Indecisiveness, Lack of Information, Internal Conflicts, and Conflicts with Others. Gati, Krausz, et al. (1996) described the first two variables, Lack of Motivation and Indecisiveness, as having influence before the decision process, and they were included as background predictor variables. Lack of Information, Internal Conflicts, and Conflicts with Others acted as indicator variables. Lack of Motivation was shown to impact on both Difficulties and Status. The amended structural model of the CDDQ is presented in Figure 2.

Insert Figure 2 about here

Evaluation of the Full Model

Having developed a modified model which accounted for the relationships among the CDDQ variables and CDM status (Albion & Fogarty, 2001), the model was extended to include relationships between individual difference variables and CDM difficulties and status as hypothesised in Figure 1. This model (not reported) was not a good fit, $\chi^2 (158, N = 121) = 543.98, p < .01, CMIN/df = 3.44, TLI = .57, CFI = .64, RMSEA = .14$. The analysis revealed many nonsignificant pathways, which indicated that a number of the variables included in the theoretical model had no practical part to play in predicting either CDM difficulties or CDM status.

Modification indices provided by AMOS suggested that the fit of the model could be improved by allowing a number of intercorrelations among Lack of Motivation and Decisiveness and the two personality variables that were demonstrated as having significant relationships in the model, Conscientiousness and Neuroticism. The modifications recommended included correlations between Lack of

Motivation and Neuroticism, Indecisiveness and Neuroticism, Conscientiousness and Lack of Motivation, and Conscientiousness and Neuroticism.

These modifications made good theoretical sense, as aspects of the personality trait Neuroticism have generally been associated with depressive affect, apprehensiveness, discouragement, hopelessness, and vulnerability to stress and anxiety (Costa & McCrae, 1991). These negative emotions would certainly impact on motivation and decisiveness. On the other hand, Conscientiousness has been associated with positive motivational attributes, such as prudence, diligence, and purposefulness (Costa & McCrae), not only providing justification for including the relationship between Conscientiousness and motivation, but also indicating that this trait would be related to Neuroticism. Modification indices also suggested that Conscientiousness exerted its influence on the outcome variable, Status, rather than the Difficulties variable. It was decided to respecify the model by incorporating all of the above amendments, and by removing all nonsignificant pathways. The model (see Figure 3) was then reevaluated. This time fit indices indicated that the model fitted the data, $\chi^2 (29, N = 121) = 30.67, p = .38, CMIN/df = 1.06, TLI = 1.00, CFI = 1.00, RMSEA = .02$.

Insert Figure 3 about here

It is interesting to note that the addition of the individual difference variables to the model did little to increase the predictive power of the model. There was a slight increase (44% cf. 43%) in the prediction of Difficulties, but there was no variation in the prediction of decision Status in the full amended model (52%) from

what was predicted by the model incorporating CDDQ variables only (see Figure 2). It appeared that any effects due to an individual's personality were substantially accounted for by the Lack of Motivation factor. While parsimonious models are highly valued in SEM (e.g., Browne & Cudeck, 1993; Gerbing & Anderson, 1993), and it could be argued that the individual difference variables were superfluous, it was decided that their inclusion in the model could be justified. Both Conscientiousness and Neuroticism were significantly related to many variables in the model, and their inclusion added to the interpretability of the model by elaborating on some of the specific ways in which CDM difficulties impacted on CDM status. Furthermore, the presence of significant correlations between Lack of Motivation and both Conscientiousness and Neuroticism allows for the possibility that these two personality dimensions can account for some of the variance in this CDM variable. The use of a model containing both causal and reflective indicators (MacCallum & Browne, 1993) did not permit the fitting of regression pathways between these personality constructs and Lack of Motivation. Separate analyses, however indicate that Neuroticism and Conscientiousness account for 24% of the variance in Lack of Motivation.

Discussion

Although this model provides a useful representation of many of the factors influencing CDM in young people, it does not fully support the hypotheses or meet all the aims of the study. In particular, the role of intelligence remains substantially unexplained. Results accorded with Ackerman and Heggestad's (1997) notion that intelligence, personality, and interests are overlapping constructs, with analysis of these data indicating that crystallised intelligence, as measured by the Shipley scale (Zachary, 1991), is positively correlated with Investigative career interests and the

personality dimension of Openness. However, while it may be that intelligence and interests influence the content of an individual's career choice, they appear to be non-significant in the process of CDM.

The study was also unable to demonstrate the expected indirect relationship between intelligence and CDM, a pathway which ran from Intelligence to the latent construct Difficulties and from there to Status. The most likely explanation for the failure to find any such relationship is that no objective measure of career knowledge was included in the test battery, with the assessment of career knowledge relying solely on self-report data. Brown (1996) cited evidence that self-estimates of ability were often as reliable a measure as aptitude tests. However, although this may be the case for abilities which are regularly assessed (such as school-based abilities) or for which there are opportunities for social comparison (such as sporting or artistic abilities), it may not apply to idiosyncratic knowledge bases such as career information. It is possible that for this type of knowledge self-reports may be more closely related to self-efficacy estimates, a relationship that warrants further investigation (Brown, 1996). Further investigation is needed to determine the role of intelligence in CDM.

Gender also proved to be inconsequential in the prediction of decision status, and the role of gender-type remains unresolved. The poor psychometric qualities of the PAQ (Spence & Helmreich, 1978; Spence et al., 1974) precluded any conclusions being drawn from its results. In addition, high intercorrelations between the sex-type variable, personality traits, and CDM factors prompted a partial correlation analysis which supported the contention that any contribution made by the attributes measured by the PAQ was subsumed in the assessment of the personality dimensions.

Despite those aspects of the conceptual model that were not supported, the model of CDM developed in this study does provide useful information. The model confirms that the categories of difficulties contained in the CDDQ (Gati, Krausz, et al., 1996) are significant determinants of the decision status of young people. The factorial structure also supports the multidimensionality of undecidedness, making the scale a useful tool for career counsellors to diagnose specific problem issues faced by undecided clients.

While the CDDQ is comprehensive in its measure of CDM difficulties, and a measure of these difficulties can predict a substantial amount of decision status, the model shows that the explanation of CDM can be elaborated by including background variables such as personality traits. The data provide substantial evidence for the hypothesised role of personality in CDM. Two of the Big-Five (Costa & McCrae, 1991) personality traits, Conscientiousness (C) and Neuroticism (N), were correlated with the two causal indicators, Lack of Motivation and Indecisiveness, and also had significant direct effects on decision status and decision difficulties respectively.

Individuals who score high on the C scale are usually competent, orderly, dutiful, achievement oriented, self-disciplined, and thoughtful (Costa & McCrae, 1991). It is not surprising then, that C would be a determining factor in CDM. Endowed with such attributes as organisational ability, industriousness, self-confidence, and persistence, students high in this dimension are likely to approach the CDM task as they do most others – with enthusiasm and diligence. Conscientiousness is related to all categories of difficulties. According to Costa and McCrae, individuals possessing the attributes associated with C are by definition highly motivated, so they are unlikely to report problems in this area. They are also competent and purposeful, and while they tend to think carefully before acting, they typically have an internal

locus of control, and are generally not likely to exhibit indecisiveness. Their level of diligence would suggest that they are likely to actively seek out the information and advice necessary to make career decisions, so are also less likely than others to lack career-related knowledge. Their persistence would also ensure that they pursued avenues to resolve any conflicting advice or information they may have received, and their determination would diminish their concern about any possible barriers that may be restricting their choices. Such hindrances are likely to be enthusiastically embraced as challenges to be overcome, rather than as limitations. So it can be seen that just as C is a predictor of workplace achievement (Dye, 1991, cited in Costa & McCrae, 1991), it also provides a good indication of people's decidedness and confidence at their time of entry into the world of work.

High scorers on the N scale are typically apprehensive, prone to worry and distress, are likely to feel sadness and hopelessness, self-consciousness and shyness. (Costa & McCrae, 1991). These traits are also likely to prevent a person from effectively dealing with opportunities and situations at all stages of their development, including the range of activities involved in deciding on a career. According to social learning theory (Krumboltz, 1991), self identity and career identity are formed during a person's lifetime through observation of others and through participation in a variety of activities. Those with a shy or self-conscious nature will not actively seek out nor will be encouraged to experience a wide range of opportunities for developing this knowledge, thus preventing them from becoming more self-confident, self-assured, and decided. They also exhibit a bias in their selective attention to and interpretation of stimuli. High Ns are likely to pay more attention to threatening than non-threatening stimuli, and to interpret ambiguous stimuli in a negative manner (Walsh, Wilding, & Eysenck, 1994)

This tendency to focus on difficulties and free-floating anxiety – a characteristic of those who score high on Neuroticism (Costa & McCrae, 1991) – make it likely that such anxiety will exacerbate the concern commonly associated with career indecision. Their compounded anxiety would serve to prevent them from taking the necessary action (making a choice) to reduce their distress. In fact, research has shown that when faced with indecision, such individuals are more likely to employ emotion-focused coping strategies such as escape-avoidance rather than more effective problem-focused strategies (Dorn & Matthews, 1992).

Despite previous research findings that people with different career interests differed in their CDM (Holland, Gottfredson, et al., 1980; Holland & Nichols, 1964), our data did not provide evidence of career interests being implicated in the prediction of career decision status. The only one of the six interest dimensions that even approached having a significant influence on the decision status of students in this sample was Conventional. Holland, Gottfredson, et al. suggested that people with these interests appeared to be low in self-knowledge, this lack of insight contributing to their undecidedness.

Comrey (1988), when discussing scale development in personality and social psychology, urged researchers to go beyond the immediate context in which the scale was developed. He stressed the importance of determining how the scale “correlates with important major variables such as age, IQ, and socioeconomic status; and how its mean and standard deviation vary across naturally occurring groups of general interest” (p. 761).

Through Study 1, we have determined that CDM, as defined by Gati, Osipow, et al. (1996) in the CDDQ, links with career interest and personality variables in predictable ways but has no links with intelligence and gender-type measures. Study 2

extends this research to an adult population. Although the model has accounted for 52% of the self-reported CDM status of a sample of young final stage high school students, it remains to be seen whether the same factors impact on the decision making process of older career deciders.

Study 2

Since the emergence of developmental career theories, it has been commonly accepted that careers progress and evolve throughout life. The refinement of an earlier theory by Super et al. (1996), which enunciated a life-span, life-space approach to career development, continued to focus on the unfolding nature of careers. Super et al. emphasised the idea that career development was a continuous process as people chose, entered, and adjusted to a variety of occupations over their lifetime.

However, most career decision research has focused on school/college leavers making career-entry choices. Crites' (1973) early work suggested that CDM was usually completed by about age 21, and Super (1980) proposed a similar timeline for his Exploration stage (14-24 years). It was this stage that he considered most significant in terms of career decision making. Research into adult career development more commonly looked at post-decision factors such as work adjustment (e.g., Dawis & Lofquist, 1976; Dawis, 1994), and career progress (e.g. Holland & Gottfredson, 1994). More recent work has acknowledged that many adults also face career decisions at many different stages of their life, and that different factors will be important at the various stages. For example, Patton and McMahon's (1997) systems model described the variability in factors that influenced a person's career choices across the life-span. As people's characteristics and life circumstances changed, so did the factors influencing their career decision making. The Career Thoughts Inventory (Sampson et al., 1996) is an example of a recent assessment and

counselling tool that was designed to be used with both student and adult populations. The manual supports this multi-age use by providing adult and student norms. However, most of their adult data were obtained from “non-client” populations, that is, adults who were employed or not seeking employment. There is a shortage of data describing adult career deciders.

In an attempt to find an adult group for whom CDM could be considered as relevant an issue as it is for school leavers, cooperation was sought from staff involved with the Tertiary Preparation Program (TPP) at the researchers’ university. TPP is a course for adults who are seeking admission to a university course but do not have the necessary academic qualifications to enrol through the normal process. Completion of the course, which includes modules in mathematics, communication, and study skills, along with a career development component, enables them to demonstrate their ability to undertake tertiary study. Participants in this program have distinctive characteristics regarding their career decision status. Most have had limited opportunities to access post-school education, and some have had little previous formal education, but all are motivated to enhance their education and subsequent career prospects.

The purpose of Study 2 was to determine whether the model developed in Study 1 fits data gathered from an adult sample engaged in CDM activities. It was hypothesised that while the overall level of difficulties might be similar, the pattern of difficulties would be different for the two age groups. This expectation was based on Patton and McMahon’s (1997, 1999) systems theory. Specifically, in relation to the CDDQ, it was expected that the older group would have similar motivation levels to those of the student group. Developmental theory suggests that adults are likely to have higher levels of self-knowledge than young people, so some differences were

anticipated on the Lack of Knowledge scale. However, no other variations were expected in the level of difficulties experienced by both groups.

Method

Participants

This study used adult participants ($N = 127$), consisting of 86 females and 41 males, who ranged in age from 18 to 65 years. The mean age was 33.84 years for females ($SD = 9.58$) and 32.58 years for males ($SD = 8.14$), with an overall mean age of 33.44 years ($SD = 9.13$). Twenty seven were employed full time, 21 were studying full time, while 61 were in part-time study or work or a combination of both. Sixteen were unemployed, and two people did not indicate their current occupational status. The majority of participants were recruited from people enrolling in the university's Tertiary Preparation Program (TPP).

Materials

As in the previous study, participants completed the CDDQ (Gati, Krausz, et al., 1996); the IPIP Five-Factor Domain Scale (100-item Version) (Goldberg, 1997); the Shipley Institute of Living Scale (Zachary, 1991); the IDEAS Interest Inventory (Johansson, 1990); and the PAQ (Spence & Helmreich, 1978; Spence et al., 1974).

Procedure

Letters explaining the project and inviting students to participate were sent with enrolment materials to 423 TPP enquirers. Participants were offered individual career assessments as an incentive, and 176 positive replies were received. Questionnaires were sent out to each of these people and 117 completed forms were returned for analysis. Additional data were obtained from 10 adult acquaintances who volunteered to participate in order to obtain career advice. Participants were requested

to follow all test instructions diligently, taking particular care with timing of the Shipley Scale.

Results

Descriptive Statistics

Approximately 65% of these adult respondents indicated that they were slightly or very undecided about their career choice. However, as with the younger sample, most (81.9%) rated their satisfaction with their current level of decidedness as moderate to high, and as many as 91.4% rated their confidence in their career choice as moderate to high. Mean CDDQ scores were lower than those reported by the younger sample, although the pattern of scores was almost the same. Highest means were obtained on Dysfunctional Myths (4.60 out of 9), Indecisiveness (3.83) and the four Lack of Information subscales (3.22 to 3.79). Lowest scores were recorded for External Conflicts (1.87) and Internal Conflicts (2.61).

Reliability analysis indicated that the psychometric properties of the scales were similar for both samples. The subscales comprising the Lack of Readiness scale and the M-F scale of the PAQ were again problematic. In addition, the Internal Conflicts ($\alpha = .69$) and Lack of Knowledge about Additional Sources ($\alpha = .76$) subscales of the CDDQ also had relatively low internal consistency for the adult group.

Participants were gender-typed according to the median split method suggested by Spence (1983), which classified 11 males (26.8% of all males) as Masculine type and 24 females (27.9% of all females) as Feminine type. The majority of participants were either Androgenous or Undifferentiated.

Correlations

The correlation matrix showing relationships among the scales and demographic variables is presented in Table 2.

Insert Table 2 about here

Relationships among the three categories of difficulties variables and the decision outcome variables were similar to, but slightly less robust than, those found in Study 1. The difficulties variables were all related to each other (coefficients ranged from .28 to .78, $p < .01$) as were the decision outcomes (coefficients ranged from -.55 to .65, $p < .01$). All difficulty variables were negatively related to Satisfaction and Confidence, and positively related to Undecidedness.

Again, consistent relationships emerged between Extraversion and Enterprising and Social interests, but for this older sample a strong relationship also emerged between Extraversion and Artistic interests ($r = .39$, $p < .01$). Openness was also related to Artistic interests as had been found in Study 1 and in earlier research (Costa et al., 1984; Gottfredson et al., 1993), but surprisingly, there was no significant relationship between Openness and Investigative interests. Agreeableness was strongly related to Social interests, and to a lesser degree to Artistic and Conventional interests.

As in Study 1, the personality traits of Conscientiousness, Extraversion, Neuroticism, and Openness were significantly related to the CDM variables. Conventional interests were again related to CDM difficulties associated with Lack of Information, but for this group, the only other relationship between interest and CDM factors was the significant correlation between Enterprising interests and difficulties

due to Lack of Information and Internal Conflicts. The relationships between CDM difficulties and Investigative and Social interests which had been found in Study 1, did not emerge for this group.

While difficulty and decision variables were again unrelated to sex differences, some relationships emerged with gender-type scores. PAQ Masculine scores were negatively associated with decision difficulties and Undecidedness, and positively with Confidence and Satisfaction. Scores on the Masculine-Feminine scales were related to difficulty variables but not decision status, and the only difficulty or decision variable with which Feminine scores were related was Indecisiveness. Partial correlations of gender-type and decision and difficulty variables, while controlling for the five personality traits, again added credence to the assumption that gender-type relationships were more readily explained as personality differences.

Fitting the Model

The model developed in Study 1 was fitted to the current data set, and proved to be a reasonably good fit, $\chi^2 (29, N = 127) = 50.25, p < .01, CMIN/df = 1.73, TLI = .93, CFI = .96, RMSEA = .08$, with most of the fit indices reaching acceptable levels. The pathway from Lack of Motivation to Status was not significant for this group. As well as having satisfactory fit statistics, the model was also able to predict as much as 46% of Difficulties and 61% of CDM status for this sample (see Figure 4).

Insert Figure 4 about here

The SEM analysis indicates that the pattern of difficulties is similar for student and adult career deciders. However, to investigate whether there were between-group differences in the level of difficulties experienced, the means on the CDDQ subscale

scores for the two groups were compared by conducting a multivariate analysis of variance (MANOVA). Levene's univariate test for equality of error variances was significant for Internal Conflicts ($p = .02$) and Conflicts with Others ($p = .001$), indicating that homogeneity of variance had been violated, and necessitating the use of a more conservative alpha level in interpreting the univariate F-tests for these subscales (Coakes & Steed, 2001). Pillai's Trace criterion ($F = 4.02, p < .001$) indicated that there was a significant multivariate effect across the groups, so the univariate effects were interpreted. In order to avoid familywise error, and to establish a more conservative alpha level, a Bonferroni-type adjustment of dividing the usual alpha level by 5 (the number of comparisons) was made, which set the significant alpha level at .01. Using this criterion, only Internal Conflicts and Conflicts with Others demonstrated significant differences across the groups. Results are summarised in Table 3.

Insert Table 3 about here

These results show that there are in fact some significant differences between the manifest scores on the CDDQ for adults and young people. In all scales adults have reported fewer difficulties than were reported by young people, although at the more conservative level of .01, only the last two of these differences are significant. The scale on which least inter-group variation was evidenced was Lack of Motivation.

Discussion

The analyses in this replication study have shown that the model representing the relationships among the variables measured by the CDDQ is consistent across groups, and that the constructs affecting CDM are similar for students making entry-

level career choices and adults making mid-career choices. However, a comparison of the observed scores on the individual scales of the CDDQ for students and adults showed that older career deciders reported significantly fewer difficulties with Internal Conflicts and Conflict with Others than their younger counterparts.

It had been hypothesised that motivation levels would be similar for both groups, given that career choice was a salient feature for adult and student participants. This, in fact, was the scale where there was least variability between the groups. While it presented as a separate factor, Lack of Motivation was not endorsed as a serious problem for either of the groups, indicating the importance generally placed on career issues by these participants.

The hypothesised difference between students' and adults' reported career knowledge was not found to be significant, suggesting that lack of career-related knowledge is an issue for deciders at all age levels. The second subscale, Lack of Information, presented as a single dimension for both groups. It appears that if people feel they have problems due to lack of knowledge, they tend to view it as a global concern about their ignorance of the process and many or all of the factors involved in that process.

The data relating to conflicting information indicated that young people experienced more difficulties in this area and that they tended to separate their concerns into two categories. Some issues related to internal or personal factors (Internal Conflicts) while others were seen as external factors such as conflict with significant others (Conflicts with Others). However, PAF analysis (not reported) of this subscale for the adult group suggested that, for them, conflicts appear to arise from three areas. The first is the approach-approach type conflict associated with having a number of viable and desirable alternatives from which to choose. Their

broader world view may provide them with a range of alternatives that they are able to consider. The second conflict area is similar to that identified by the younger group: Conflict with Others. Whereas young people are likely to experience this conflict with parents and teachers, adults are more likely to face this difficulty from partners and dependents. Family responsibilities and commitments are likely to be an issue for this group and a significant factor in their CDM. The third area of conflict for adults appears to stem from a factor labelled as Lack of Optimisation, that is, a concern that an individual's skills are being underutilised. This factor may not generalise across the adult population as a whole but may be a particular concern for this sample who are planning to upgrade their qualifications by enrolling in a university level course.

Generally, results on the CDDQ suggested that most problems faced by career deciders were related to their adherence to dysfunctional myths about careers and to their reported lack of information about careers and the CDM process. Inspection of the predictive models developed in Studies 1 and 2 revealed that Lack of Information formed a substantial part of CDM difficulties which in turn predicted CDM status.

As noted earlier, Lack of Information is a self-report measure and is not an objective measure of career-related knowledge. Across the two studies, it was consistently unrelated to general intelligence. It remains to be established whether these reports reflect actual knowledge levels or whether they relate to metacognitive variables such as self-confidence. Further studies could elaborate on these issues. Nevertheless, an implication of these findings is that career deciders want access to good career information, particularly in the new work environment made up of "portfolio" (Spender, 1997) or "boundaryless" (Sullivan, 1999) careers. Career counsellors, or career development facilitators – a term preferred by Patton and

McMahon (1999) – may be one source of this information, but people need also to become aware of the range of information available on the world wide web. Access to up-to-date resources will facilitate individuals' taking responsibility for their own career development.

Sex-type presented as an ambiguous influence on CDM. It had been hypothesised that people adhering to gender stereotypes would be likely to be less undecided than those who did not hold stereotypical views. A limitation of the present studies was that the instrument used to measure stereotyped attitudes, the PAQ (Spence et al., 1974), was developed almost three decades ago. Since then, considerable social change has occurred, particularly in gender issues. The PAQ failed to differentiate gender-types for these samples, and it appeared that the effect of gender-type was better explained as the influences of various personality traits.

Personality indeed emerged as the major predispositional variable in the predictive models. As with sex-type, career interest types were also overshadowed by the effects of personality. However, the particular traits which acted as significant predictor variables were different for the two age groups. Neuroticism and Conscientiousness had been the major influences for young people, while only Conscientiousness, a trait associated with purposeful and planful thinking and action, emerged as significant for adults.

These two studies have indicated that the model of CDM behaviour based on the CDDQ is relevant to career deciders of all ages. Difficulties, particularly those associated with perceived lack of career knowledge, are significant predictors of career decision status across both age groups. While individual difference variables such as personality will influence a person's career decidedness, it appears that CDM difficulties can be effectively ameliorated by providing access to relevant, up-to-date

resources and information. A crucial role of teachers, parents, career advisors, and mentors is to help provide this information.

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Figure 1. Conceptual Model of Career Decision Making Process

Figure 2. Amended Structural Model of Career Decision-making Difficulties

Questionnaire.

Figure 3. Modified Model of Career Decision Status.

Figure 4. Adult Data fitted to CDM Status Model.

Table 1

Correlational Data for the IDEAS Interest Inventory, the International Personality Item Pool Five-Factor Domain Scale, Age, the Shipley Institute of Living Scale, Sex, the Career Decision Difficulty Questionnaire, and the Personal Attributes Questionnaire. (N = 121).

	Artist 1	Conv 2	Enter 3	Invest 4	Real 5	Social 6	Agree 7	Cons 8	Extra 9	Neurot 10	Open 11	Age 12
1	1.00											
2	.27**	1.00										
3	.40**	.58**	1.00									
4	.07	.23*	.46**	1.00								
5	.14	.34**	.41**	.49**	1.00							
6	.50**	.51**	.61**	.19*	.38**	1.00						
7	.28**	.13	.12	-.05	.14	.58**	1.00					
8	-.03	.16	.03	.09	.22*	.10	.38**	1.00				
9	.19*	.00	.38**	.06	.07	.29**	.30**	.10	1.00			
10	.02	.12	-.06	-.10	-.28**	-.09	-.25**	-.23*	-.39**	1.00		
11	.52**	-.07	.31**	.33**	.19*	.28**	.33**	.23*	.42**	-.26**	1.00	
12	.01	-.09	-.05	.35**	.15	-.03	.03	.09	-.11	-.07	.10	1.00
13	.15	-.02	.11	.31**	.11	.01	-.03	-.13	.10	-.08	.24**	.17
14	-.38**	-.15	-.11	.25**	.25**	-.29**	-.38**	-.10	-.19*	-.18*	-.06	.25**
15	.02	.14	-.05	-.17	-.09	.05	-.04	-.21*	.24**	.38**	-.27**	-.11
16	-.02	.26**	.15	-.07	-.04	.19*	-.03	-.24**	-.24**	.25**	-.31**	-.08
17	-.04	.18*	.05	-.18*	-.02	.05	-.10	-.16	-.18**	.32**	-.19*	-.12
18	-.01	-.12	-.05	.15	.07	-.04	.18	.39**	.28**	-.23*	.22*	.13
19	.05	.11	.04	-.17	-.10	.06	-.12	-.28**	-.18	.19*	-.13	-.19*
20	-.05	-.03	.01	.22*	.10	-.06	.10	.40**	.28**	-.20*	.19*	.14
21	-.14	-.27**	.03	.17	.13	-.25**	-.22*	.06	.23*	-.22*	.16	.09
22	.23*	.12	.06	-.18	-.03	.43**	.57**	.22*	.18	-.13	.17	-.01
23	.01	-.09	.23*	.15	.14	.08	.17	.28**	.46**	-.30**	.35**	.04
24	.13	.23*	.09	-.09	-.00	.24**	.17	.02	.11	-.01	-.02	-.11

	Intell 13	Sex 14	L/Rdns 15	L/Info 16	Incons 17	Satis 18	Undec 19	Confid 20	M-F 21	Femin 22	Masc 23	Sxtyp 24
13	1.00											
14	.07	1.00										
15	-.11	-.13	1.00									
16	-.07	-.13	.59**	1.00								
17	-.20*	.01	.56**	.74**	1.00							
18	-.01	-.03	-.42**	-.58**	-.44**	1.00						
19	.07	-.04	.35**	.58**	.48**	-.75**	1.00					
20	-.00	.10	-.43**	-.54**	-.41**	.86**	-.72**	1.00				
21	.04	.21*	-.27**	-.13	-.06	.16	-.13	.20	1.00			
22	-.07	-.25**	-.05	-.13	-.13	.11	-.13	.05	-.43**	1.00		
23	.03	-.04	-.21*	-.22*	-.22*	.36**	-.40**	.36**	.31**	.22*	1.00	
24	.05	-.04	.02	.15	.07	-.14	.16	-.18*	-.21*	-.14	.23*	1.00

Note. ** $p < .01$, * $p < .05$

Artist = Artistic, Conven = Conventional, Enter = Enterprising, Invest = Investigative, Real = Realistic, Agree = Agreeableness, Cons = Conscientiousness, Extra = Extraversion, Neurot = Neuroticism, Open = Openness, Intell = Intelligence, L/Rdns = Lack of Readiness, L/Info = Lack of Information, Incons = Inconsistent Information, Satis = Satisfaction, Undec = Undecided, Confid = Confidence, M-F = Masculinity-Femininity, Femin = Femininity, Masc = Masculinity, Sxtyp = Sex-typed.

Table 2

Correlational Data for the IDEAS Interest Inventory, the International Personality

Item Pool Five-Factor Domain Scale, Age, the Shipley Institute of Living Scale, Sex,

the Career Decision Difficulty Questionnaire, and the Personal Attributes

Questionnaire. (N = 127)

	Artist 1	Conv 2	Enter 3	Invest 4	Real 5	Social 6	Agree 7	Cons 8	Extra 9	Neurot 10	Open 11	Age 12	Intell 13
1	1.00												
2	.21*	1.00											
3	.38**	.46**	1.00										
4	.03	.05	.09	1.00									
5	.18*	.26**	.28**	.24**	1.00								
6	.30**	.45**	.40**	.01	.25**	1.00							
7	.27**	.24**	.16	-.11	-.01	.50**	1.00						
8	.19*	-.16	.09	-.10	-.02	-.13	.19*	1.00					
9	.39**	-.04	.35**	-.10	.06	.27**	.42**	.38**	1.00				
10	.00	.12	-.09	.08	.04	.13	.04	-.24**	-.31**	1.00			
11	.32**	-.31**	.12	.10	-.13	-.09	.08	.43**	.49**	-.31**	1.00		
12	.00	-.10	-.20*	.14	.05	-.11	.02	-.05	-.06	-.17	.02	1.00	
13	.13	-.14	-.13	.12	-.15	-.17	-.19	.09	.05	-.14	.22*	.30**	1.00
14	-.34**	-.25**	-.01	.25**	.24**	-.23**	-.47**	-.08	-.19*	-.06	-.01	-.07	-.04
15	-.01	.08	-.04	-.05	.08	.02	-.17	-.28**	-.27**	.32**	-.23**	-.07	-.17
16	.03	.16	.07	-.10	.03	.11	.03	-.24**	-.22*	.45**	-.33**	-.22*	-.08
17	.10	.19*	.20*	-.05	.15	.15	-.03	-.22**	-.20*	.34**	-.25**	-.15	-.05
18	.10	.13	.21*	-.06	.04	.07	-.02	-.09	-.17*	.33**	-.15	-.26**	-.08
19	.05	.09	.00	-.03	-.01	.05	.01	-.14	-.23*	.22*	-.14	-.17	-.15
20	-.00	-.09	-.15	.04	-.00	.04	.03	.24**	.14	-.23**	.21*	.07	.08
21	.07	.07	.10	-.13	-.01	.01	.02	-.16	-.05	.24**	-.16	-.06	.14
22	.08	-.02	-.06	-.05	.08	.03	.06	.26**	.13	-.29**	.29**	-.01	-.05
23	.01	-.27**	.09	.07	.03	-.21*	-.31**	.18*	.28**	-.51**	.32**	.04	.16
24	.15	.25**	.11	-.10	.00	.38**	.71**	.10	.22*	.17	-.03	-.07	-.14
25	.09	-.25**	.24**	.00	.07	-.01	-.02	.47**	.48**	-.44**	.49**	-.12	.09
26	.15	.16	.13	-.10	-.00	.17	.20*	.21*	.16	-.24**	.02	-.12	-.01

	Sex 14	L/Mot 15	Indsve 16	L/Info 17	Intcon 18	Conot 19	Satis 20	Undec 21	Confid 22	M-F 23	Femin 24	Masc 25	Sxtyp 26
13													
14	1.00												
15	.14	1.00											
16	-.04	.39**	1.00										
17	.05	.55**	.52**	1.00									
18	.04	.52**	.41**	.78**	1.00								
19	.07	.31**	.28**	.37**	.48**	1.00							
20	-.07	-.40**	-.42**	-.55**	-.51**	-.18*	1.00						
21	-.07	.45**	.35**	.57**	.62**	.17	-.55**	1.00					
22	-.04	-.41**	-.32**	-.50**	-.53**	-.17	.65**	-.63**	1.00				
23	.25**	-.13	-.51**	-.17	-.18*	-.16	.15	-.09	.14	1.00			
24	-.29**	-.12	.19*	-.05	-.05	.11	.02	-.07	.12	-.42**	1.00		
25	.18*	-.38**	-.43**	-.25**	-.18*	-.16	.27**	-.25**	.32**	.56**	.01	1.00	
26	-.01	.14	.28**	.08	.11	.06	-.02	.18*	.01	-.25**	.40**	-.05	1.00

Note. ** p < .01, * p < .05

Artist = Artistic, Conven = Conventional, Enter = Enterprising, Invest = Investigative, Real = Realistic, Agree = Agreeableness, Cons = Conscientiousness, Extra = Extraversion, Neurot = Neuroticism, Open = Openness, Intell = Intelligence, L/Mot = Lack of Motivation, Indsve = Indecisive, L/Info = Lack of Information, Intcon = Internal Conflict, Conot = Conflict with Others, Satis = Satisfaction, Undec = Undecided, Confid = Confidence, M-F = Masculinity-Femininity, Femin = Femininity, Masc = Masculinity, Sxtyp = Sex-typed.

Table 3

Comparison of Descriptive Statistics of CDDQ scores for Study 1 (Students) and Study 2 (Adults).

Scale	Students ^a		Adults ^b		F	<i>p</i>
	Mean	SD	Mean	SD		
Lack of Motivation	8.98	4.97	7.76	4.73	3.92	.049
Indecisiveness	14.55	6.21	12.84	6.71	4.33	.038
Lack of Information	66.16	32.34	56.87	33.09	4.99	.026
Internal Conflict	45.56	22.07	35.25	19.57	15.19	.000
Conflict with Others	12.23	8.75	8.83	7.03	11.41	.001

Note: ^an = 121. ^bn = 127.

Table 4

Comparison of Means and Standard Deviations on Shipley, IDEAS, PAQ, and IPIPScales by Gender for Study 1 (Students) and Study 2 (Adults).

SCALE	Subscale	Mean (SD) for Students ^a				Mean (SD) for Adults ^b			
		Female ^c	Male ^d	<i>F</i>	<i>p</i>	Female ^e	Male ^f	<i>F</i>	<i>p</i>
SHIPLEY									
	Vocabulary	33.56(4.43)	33.20(4.33)	.19	.664	25.64(3.67)	26.81(4.00)	2.7	.106
	Abstraction	33.43(5.21)	33.07(4.88)	.14	.713	33.72(3.38)	33.44(4.75)	.14	.711
IDEAS									
	Realistic	13.09(4.87)	15.63(4.60)	7.83	.006	11.10(5.27)	14.10(5.94)	8.22	.005
	Investigative	14.05(6.15)	17.28(5.68)	8.07	.005	10.91(6.69)	14.53(7.13)	7.76	.006
	Artistic	18.85(5.26)	14.70(5.98)	15.90	.000	16.90(8.37)	10.45(6.01)	19.84	.000
	Social	17.97(4.41)	15.34(6.66)	6.97	.009	16.18(6.26)	12.53(4.92)	10.91	.001
	Enterprising	14.83(5.25)	14.70(6.16)	.02	.901	13.31(5.05)	12.21(4.81)	1.35	.247
	Conventional	14.30(5.68)	11.21(5.80)	8.12	.005	12.24(6.24)	10.44(5.00)	2.64	.107
PAQ									
	Androgenous	22.86(4.26)	25.27(4.83)	8.13	.005	25.12(3.96)	23.17(4.56)	5.55	.020
	Masculine	28.67(4.73)	30.51(5.05)	4.02	.047	28.51(4.79)	28.09(4.68)	.22	.643
	Feminine	32.09(4.08)	29.44(4.38)	11.22	.001	31.81(4.91)	29.30(4.53)	7.62	.007
IPIP									
	Neuroticism	35.28(13.74)	33.56(14.09)	.43	.515	37.63(13.65)	32.72(11.57)	3.98	.048
	Extraversion	47.09(10.87)	42.61(11.53)	4.54	.035	49.65(12.39)	44.70(11.53)	4.65	.033
	Openness	52.98(9.6)	52.88(8.69)	.00	.956	52.23(10.03)	51.07(7.65)	.44	.510
	Agreeableness	61.47(7.88)	52.37(8.58)	34.94	.000	58.99(11.06)	49.88(9.82)	20.28	.000
	Conscientiousness	54.14(10.49)	52.34(11.15)	.78	.378	46.18(13.62)	43.67(8.94)	1.17	.281

Note: ^an = 121, ^bn = 127, ^cn = 78, ^dn = 43, ^en = 86, ^fn = 41.