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## The Relationship Between Vocational Self-Concept Crystallization, Ego-Identity Status, and Occupational Indecision, as Mediated by Rational or Experiential Processing

La relation entre la cristallisation du concept professionnelle de soi, l'état de l'ego-identité, et l'indécision professionnelle par l'entremise du traitement rationnel ou expérientiel

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### ABSTRACT

The cognitive information processing model provides a useful way of looking at career decision-making but lacks a body of empirical evidence to support the specific processes that make possible the effective use of information about self and the world of work. The research described here sought to identify the role of an experiential or rational thinking style in moderating the development of vocational self-concepts and a vocational identity. As suggested by the literature, crystallized vocational self-concepts and identity achievement were positively correlated with decreased career indecision. A significant positive correlation was found for both rational and experiential thinking and vocational self-concept crystallization. Moderate but significant negative correlations were found for rational and experiential thinking and career indecision. The results suggest that both thinking styles have an impact on the development of vocational self-concepts and vocational identity and that they have a mediating effect on the relationship between vocational self-concept development and career indecision.

### RÉSUMÉ

Le modèle cognitif du traitement de l'information fournit un moyen utile d'examiner la prise de décision en matière de carrière mais manque un corps de preuve empirique pour appuyer les processus spécifiques qui rendent possible l'utilisation efficace d'information sur soi-même et sur le monde du travail. La recherche décrite ici a cherché à identifier le rôle d'un style de pensée expérientielle ou rationnelle dans le développement des concepts professionnels de soi et d'une identité professionnelle. Comme suggère la littérature, le concept professionnel de soi cristallisé et la réalisation d'identité sont corrélés de façon positive avec l'indécision de carrière diminuée. Une corrélation positive significative a été trouvée pour la pensée rationnelle et expérientielle et la cristallisation du concept professionnel de soi. Des corrélations négatives modérées mais significatives ont été trouvées pour la pensée rationnelle et expérientielle et l'indécision de carrière. Les résultats suggèrent que les deux styles de pensée ont un impact sur le développement des concepts professionnels de soi et de l'identité professionnelle et qu'ils ont un effet médiateur sur la relation entre le développement du concept professionnel de soi et l'indécision de carrière.

The Cognitive Information Processing (CIP) model of career development (Peterson, Sampson, & Reardon, 1991; Peterson, Sampson, Reardon, & Lenz, 1996) was developed in response to the needs of both counsellors and their clients to understand how individuals process information in conjunction with the task of making occupational decisions. Peterson et al. (1996) proposed that cognitive inputs in the form of self-knowledge and occupational knowledge are processed using a set of generic information-processing skills, and that the stages of processing culminate in the execution or implementation of a plan of action aimed at rectifying the identified problem.

The nature of the CIP approach is unique (Zunker, 2002) in that it provides a useful and easy model for how occupational decisions should be made and describes how its components can be applied to career counselling. The CIP model is founded on solid psychological theory supported by a considerable body of research evidence (Jepsen, 2000). Despite the fact that Peterson et al. (1991) developed the theory more than 20 years ago, research evaluation of the model since then has been relatively slow. Additionally, the individual cognitive differences that moderate the decision-making process have not been investigated at any length, as indicated by the bibliography provided on the website dedicated to the theory (Sampson, Peterson, Reardon, & Lenz, 2014).

Experienced counsellors will recognize that even when the same information is provided, clients vary greatly in their ability to make an occupational decision. This variability leads to the question: What are the factors that allow some university students to make occupational decisions easily and with confidence, while others flounder and experience significant levels of anxiety as they struggle? The research described here considers how much of the variability in occupational indecision could be attributed to each of vocational self-concept and identity. In addition, it was expected that the crystallization of self-knowledge in the form of vocational self-concepts and a vocational identity and their relationship to occupational indecision would be influenced by the tendency to think rationally or experientially.

#### DEVELOPMENT OF SELF-KNOWLEDGE

What we believe about ourselves is largely determined by our past experiences and the episodes they have created in memory. Our sense of self or identity is highly dependent on explicit memory for past episodes. This sense of self or understanding of who one is requires access to memories of personally relevant experiences (Klein, 2001). Hart and Fegley (1997) have conceptualized the self as being represented in memory at three different levels. At the highest level, the self-concept is a theory with a set of assumptions about the nature of self in relation to the world. At the next level, the self is made up of many interrelated schemas, and at the most specific level, the self is derived from and represented as specific personal episodes in memory. While all semantic self-knowledge is episodic in origin, over time personal facts from these episodes can be recalled in the absence of memory of the original episode (Haslam, Jetten, Haslam, Pugliese, & Tonks,

2011). The episodes stored in memory contribute to semantic self-knowledge about what we look like, think, feel, want, and do, and to autobiographical knowledge about events in which the individual participated (Haslam et al., 2011; Kihlstrom, Marchese-Foster, & Klein, 1997).

Some of the many cognitive tasks that we engage in daily may require content-specific information from episodic memory alone or from semantic memory alone, and other tasks may require content-specific information from both of these memory systems; self-trait description is one task that requires both (Klein, Cosmides, Tooby, & Chance, 2002). Theories of trait judgement assume that the individual has a database of experiences from which trait judgements can be made. Episodic memory records events with conscious awareness that “this happened to me.” Semantic personal memory enables people to retrieve general facts about their personal past in summary form. Although these summary representations are about the self and have been abstracted from memories of the self in a set of events, they do not preserve a record of the events from which they were derived. When trait-relevant experience is low, self-knowledge regarding that trait will be represented episodically because too few behaviours have been encountered to support the formation of semantic trait representations (Klein, Sherman, & Loftus, 1996). As trait-relevant behavioural experience increases, people no longer require behavioural episodes to make trait judgements about self (Klein et al., 1996).

Clarification of vocationally related self-concepts can occur while reflecting on past paid and unpaid work experiences (Coulter-Kern, Coulter-Kern, Schenkel, Walker, & Fogle, 2013; Sampson, Lenz, Reardon, & Peterson, 1999; Savickas, 2010). Peterson et al. (1991) referred to crystallization as a narrowing of relevant items, be they occupations or traits, to a manageable number. This involves the ability to elaborate and then synthesize the available information. Part-time work, especially work experience that includes a high degree of variety and that provides opportunities to work with others and receive feedback, contributes to a more meaningful pattern of values associated with work, and thereby facilitates the process of differentiating work values (Skorikov & Vondracek, 1997). The processing of experiences and the episodes they produce in memory creates semantic concepts about the self. These concepts become the basis for the development of a broader system of self-concepts, as originally described by Super and colleagues (Super, Starishevsky, Matlin, & Jordaan, 1963; Weng & McElroy, 2010), that are useful in making career decisions.

#### RATIONAL AND EXPERIENTIAL THINKING

If it is true that episodes are integral to the development of self-concepts and thus career decision-making, then one might predict that individuals who tend to think experientially, as opposed to rationally, may have an advantage in the development of their vocational self-concept. Experiential information processing is described as “preconscious, holistic, automatic, intuitive, based on self-evident ‘truths,’ crudely integrated, and often stereotypical” (Klaczynski, Fauth, & Swanger,

1998, p. 186). Rational processing, by contrast, is “conscious, effortful, analytical, slower, utilizes context-independent principles, and requires logical justification and empirical verification for decision-making” (p. 186). According to cognitive-experiential self-theory (CEST) (Epstein & Pacini, 1999; Lieberman, 2002), the two systems are generally independent but also work interactively throughout the life span. Behaviour can thus be seen as a product of the two systems.

Epstein, Lipson, Holstein, and Huh (1992) provided empirical support for the existence of the rational and experiential processing systems and their interactive nature. They also pointed out that individual differences exist in the extent to which people rely on one of the information processing systems over the other. Klaczynski et al. (1998) were able to show that rational processing was a better predictor of identity achievement and diffusion than a variety of critical thinking dispositions or formal operational ability, as indicated by successful advancement through Piaget’s final stage of cognitive development (Woolfolk, 2010).

Klaczynski et al. (1998) concluded that rational processing is particularly related to Marcia’s (1966) identity achievement and identity diffusion statuses. They also speculated that an important prerequisite for identity achievement may be the tendency to make future-oriented decisions based on a rational rather than an experiential processing style. They reasoned that a rational processing disposition assists the individual’s cognitive competencies in the tasks of evaluating information, particularly the information related to self. To place this in the context of the CIP model of vocational decision-making, a rational processing approach may better facilitate the integration of self- and occupational knowledge, even though the experiential approach may be the preferred modality. In the context of information processing and knowledge attainment, the experiential mode may be integral to the appraisal and attendance to phenomena at the initial stages of processing, and the more conscious tasks of differentiating and integrating may well be the domain of rational thought.

With regard to occupational decision-making, decision-making style (rational or intuitive) has been correlated with indices of successful career decision-making. In a study of the structure of decision-making difficulties, Shiloh and Shenav-Sheffer (2004) found that decision difficulties were negatively correlated to a rational style and were positively, but less strongly, related to the intuitive style. Singh and Greenhaus (2004) examined the relationship between rational and intuitive decision-making strategies and person-job fit. They found that intuitive decision-making by itself is not effective in the occupational context and needs to be accompanied by rational decision-making to promote awareness and attention to fit. They suggested that individuals need to use both rational processes and intuition, as these two tend to produce different insights that are often complementary.

In this research study, the first of two research hypotheses stated that vocational indecision scores would be higher for those participants with lower vocational self-concept crystallization, and that vocational indecision scores would be lower (a negative correlation) for more advanced identity status (achieved and moratorium statuses) and higher for the less advanced identity statuses (diffused and foreclosed

statuses). The second research hypothesis regarding rational and experiential thinking as information processing variables stated that preference for experiential information processing will be negatively correlated with crystallized vocational self-concept. More specifically, students who process information automatically and intuitively and rely on personally meaningful revelations to define the world will be less crystallized than those who process information more carefully and objectively and whose decision-making is more conscious and effortful. Thus, preference for rational information processing was expected to be positively correlated with having a crystallized vocational self-concept, and negatively correlated with career indecision.

#### METHOD

All of the 202 volunteer participants were members of introductory psychology classes offered at a university in Atlantic Canada. A cross-sectional research design was employed, and participants were given a brief introduction to the study and asked to read and sign the informed consent before completing the questionnaire package, which consisted of a demographic questionnaire and the measures described below. The demographic questionnaire included questions about gender, age, faculty, year of program, chosen major, previous attendance at another university or college, number of siblings, grade point average, and previous career counselling experiences.

#### *Measures*

*Vocational Rating Scale (VRS).* Crystallization of vocational self-concept was assessed with the VRS (Barrett & Tinsley, 1977). The VRS was developed as a global measure to assess the clarity and certainty of self-perceived patterns in vocational abilities and interests. An individual's degree of vocational self-concept crystallization was defined as "the degree of clarity and certainty of separate vocationally relevant self-concepts and the structure of the self-concepts as a whole" (Tinsley, Bowman, & York, 1989). The 40 items consist of self-descriptive statements regarding the individual's awareness of vocationally relevant attributes and characteristics. Each item is rated on a 5-point Likert scale (1 = *completely false*; 5 = *completely true*) indicating how true the respondent feels the statement is about him- or herself at the time of testing. High total scores (range is 40–200) indicate a high degree of vocational self-concept crystallization.

The VRS was validated on selected groups of university undergraduate and graduate students by examining the relationship between scores on the VRS and the Distribution scale of the Tennessee Self-Concept Scale (TSCS). The correlation was found to be .38, which proved significantly different using a two-tailed test ( $z = 2.65, p < .01$ ) (Barrett & Tinsley, 1977). The VRS has shown high internal-consistency reliability ( $\alpha = .94$ ) in previous research and has been significantly related to students' level of confidence in their vocational decisions (Taylor, 1985). A test-retest reliability of .76 was obtained in the original study using an interview

after two weeks. A Cronbach's alpha of .95 was obtained when internal-consistency reliability was assessed in the present study.

*Extended Objective Measure of Ego Identity Status-II (EOMEIS-II)*. The instrument used to assess adolescent identity status was the EOMEIS-II (Adams, Ben-nion, & Huh, 1989). The EOMEIS-II is a 64-item self-report scale designed to assess both ideological and interpersonal identity. Ideological identity includes occupational, religious, political, and philosophical lifestyle, values, goals, and standards, while interpersonal identity incorporates aspects of friendship, dating, sex roles, and recreational choices. Items were designed to determine the extent of crisis, exploration, experimentation, and commitment to which adolescents had engaged in each of these domains. The total scale is broken down into eight subscales (each containing eight items), with each participant receiving four scores in the ideological domain and four scores in the interpersonal domain. Items target each of the four identity statuses in four ideological domains (i.e., politics, religion, occupation, lifestyle) and four interpersonal domains (i.e., friendships, dating, gender roles, recreation) (Schwartz, 2004). Responses to each item are on a 6-point scale, ranging from *strongly agree* to *strongly disagree*. Thus, scores on each subscale can range from 8 to 48.

Adams et al. (1989) reported status classification agreements between the original EOMEIS and Marcia's Ego Identity Interview that ranged from 70% to 100% working with a population of undergraduate students in late adolescence. For the eight EOMEIS-II subscales, Adams et al. (1989) reported internal consistency as ranging from .37 to .77, 4-week test-retest reliability ranging from .59 to .82, and moderate correlations between the ideological and interpersonal subscales, suggesting that these identity domains, although related, are generally independent. Klaczynski et al. (1998) collected 6-week test-retest reliabilities in the ideological domain (achievement .33, moratorium .36, foreclosed .54, diffused .60) and in the interpersonal domain (achievement .27, moratorium .38, foreclosure .67, diffusion .74). With the exception of the interpersonal-achievement subscale ( $p = .07$ ), each of these correlations was significant. A more recent study by Klaczynski and Lavalley (2005) reported Cronbach's alphas of .66, .72, .80, and .70 for the achieved, moratorium, foreclosed, and diffused statuses, respectively. A Cronbach's alpha of .76 was obtained for the overall instrument when internal-consistency reliability was assessed in the present study.

*Rational-Experiential Inventory, Revised (REI-R)*. A revised version of the Rational-Experiential Inventory (Pacini & Epstein, 1999) was used to distinguish between rational and experiential information processing systems. The adapted REI has subscales measuring both ability and engagement in the rational and experiential modes of information processing. All 40 items are rated on a 5-point scale (1 = *completely disagree*; 5 = *completely agree*). The Rationality subscale (20 items;  $\alpha = .86$ ) taps individual differences in rational thinking style, characterized by its conscious, analytical, relatively slow, primarily verbal, and relatively affect-free nature (Cornelis & Van Hiel, 2006). The Experientiality subscale (20 items;  $\alpha = .90$ ) measures the more automatic, holistic, rapid, primarily nonverbal

thinking style that is intimately associated with affect (Cornelis & Van Hiel, 2006). Overall, Rationality and Experientiality scale scores are obtained by summing the appropriate ability and engagement subscales.

The revised version was compared to a variety of measures including Form S of the NEO Five Factor Inventory, and the resulting correlations indicated predictive validity for both scales (Pacini & Epstein, 1999). Reliability and factor analysis of the items in this version indicated that the two main scales (Rationality  $M = 3.44$ ,  $SD = .61$ ; Experientiality  $M = 3.47$ ,  $SD = .49$ ) were independent of each other [ $r(142) = .00$ ]. Reliability scores for the three rationality subscales in this study were Rationality, Cronbach's  $\alpha = .91$ ; Rational Ability, Cronbach's  $\alpha = .85$ ; Rational Engagement, Cronbach's  $\alpha = .87$ . Reliability scores for the three experiential subscales were Experientiality, Cronbach's  $\alpha = .88$ ; Experiential Ability, Cronbach's  $\alpha = .80$ ; Experiential Engagement, Cronbach's  $\alpha = .82$  (Pacini & Epstein, 1999). No significant gender differences for either main scale were found in Cornelis and Van Hiel's (2006) research. A Cronbach's alpha of .88 was obtained for the overall scale when internal-consistency reliability was assessed in the present study.

*Career Decision Scale (CDS)*. The CDS (Osipow, Carney, & Barak, 1976) consists of 18 items measuring the degree of an individual's career indecision. Agreement with each item is indicated on a Likert scale (1 = *not at all like me*; 4 = *completely like me*). Items 1 and 2 indicate certainty of choice of career and/or major, while items 3 to 18 indicate indecision. The indecision score is the sum of items 3–18, with higher scores indicating higher levels of indecision.

The CDS manual (Osipow, 1987) reports Indecision test-retest reliability coefficients ranging from .90 and .82 for 2 weeks to .70 for 6 weeks. A later study (Marco, Hartung, Newman, & Parr, 2003) reported an estimate of internal consistency for the Indecision scale of  $\alpha = .89$ . A Cronbach's alpha of .89 was obtained when internal-consistency reliability was assessed in the present study. The Decided scale of the CDS yielded an  $\alpha$  of .76. Its discriminant validity has been demonstrated by its ability to differentiate career decided and undecided groups (Osipow, 1987). Convergent validity has been demonstrated in relation to a number of other theoretically similar measures of career decidedness (Parr & Neimeyer, 1994).

## RESULTS

Males represented 27.7% ( $n = 56$ ) of the sample and females 72.3% ( $n = 146$ ). The average age of the participants was 20.92, ranging from 17 to 54 years. The majority came from the Faculty of Arts (40.1%), followed by the Faculty of Science (20.8%). Females outnumbered males in Arts, Science, Engineering, and Nursing, but not in Business. When asked to indicate a chosen major, more than half (51.5%) had not chosen a major. More than one quarter of the sample (26.7%) had seen a career counsellor or participated in career counselling before.

To answer the question of how much of the variability in indecision could be determined by vocational self-concept crystallization, a standard multiple regres-

sion analysis was calculated. An additional regression analysis was completed to determine how much variability in vocational self-concept crystallization could be attributed to rational and experiential styles of thinking.

### *Vocational Self-concept, Identity, and Occupational Decision-Making*

Vocational self-concept crystallization scores represent the sum of all items endorsed on the VRS. The mean score for vocational self-concept crystallization was 144.60. The scores for this sample ranged from a low of 85 to a high of 194, meaning that although the sample represented a normal curve, the curve was situated at the high end of the range of possible scores. Ideological Identity and Interpersonal Identity statuses were calculated using the SPSS computer syntax provided by the authors (Adams et al., 1989). All participants were grouped into one of four status groups (1 = *diffusion*, 2 = *foreclosure*, 3 = *moratorium*, 4 = *achieved*) for the Ideological side of identity status and then again for the Interpersonal identity status construct. For the Ideological aspect of identity, the part containing vocational identity, the majority of participants were placed in two of the status groups: diffused (41.6%) and moratorium (43.6%). The other two groups, foreclosed and achieved, accounted for 5.4% and 9.4% of the sample, respectively. For the Interpersonal aspect of identity, the majority continued to fall into the diffused (19.8%) and moratorium (58.9%) groups, while the foreclosed and achieved groups accounted for 7.9% and 11.6% of the sample, respectively. Correlational analysis of the variables with age and gender indicated a low but significant correlation between age and vocational self-concept (.17,  $p < .05$ ) and a significant correlation between gender and Interpersonal identity status (.22,  $p < .01$ ). Correlation coefficients for the relationships between all variables are included in Table 1.

Table 1  
*Means, Ranges and Inter-Correlations of Age, Gender, Vocational Self-Concept, Rational and Experiential Thinking and Career Indecision (N = 189)*

Variable	M	Range	Correlations					
			1	2	3	4	5	6
1. Age	20.91	17–54		-.05	.17*	.17*	-.09	-.13
2. Gender				—	-.04	-.22**	.13	-.07
3. VSC	144.60	85–194			—	.36**	.23**	-.72**
4. Rational	68.19	23–99				—	.16*	-.23**
5. Experiential	67.56	39–99					—	-.16*
6. Indecision	30.80	16–57						—

Note. [ $F(3, 190) = 67.14, p < .001$ ].

\* $p < .05$ . \*\* $p < .01$ .



The first research question asked if vocational self-concept crystallization and ego-identity status were related to each other and if they were related to career indecision. Correlation coefficients indicated that a significant inverse correlation between vocational self-concept crystallization and career indecision was present ( $r = -.72, p < .01$ ) as well as smaller but significant inverse correlations between both identity status domains and indecision: Ideological ( $r = -.32, p < .01$ ) and Interpersonal ( $r = -.17, p < .05$ ). The two domains were also significantly correlated ( $r = .24, p < .01$ ), and vocational self-concept was significantly correlated with both Ideological ( $r = .39, p < .01$ ) and Interpersonal ( $r = .18, p < .01$ ).

Standard regressions were performed independently on both variables, with career indecision as the dependent variable, in an effort to determine the amount of variance each variable separately contributed to career indecision. Vocational self-concept crystallization [ $F(1, 192) = 201.84, p < .001$ ] contributed 51% ( $R^2 = 0.513$ ) of the variability in predicting career indecision. The Ideological identity status domain [ $F(1, 192) = 21.53, p < .001$ ] contributed 10% ( $R^2 = 0.101$ ), and the Interpersonal identity status domain [ $F(1, 192) = 5.51, p < .001$ ] contributed 3% ( $R^2 = 0.028$ ). When taken together, the vocational self-concept crystallization variable contributed almost all of the variance accounted for by the dependent variables in predicting career indecision, suggesting that the two variables are measuring things that are quite consistent and that ego-identity status is only a significant contributor to the variance when paired with vocational self-concept crystallization.

Statistically speaking, while the simple correlations between the two identity scales (Ideological and Interpersonal) and indecision were .32 and -.17, respectively, the partial correlations were much closer to zero (-.03 and -.05), indicating redundancy between the vocational self-concept scale and the ego-identity status scales. For this reason, ego-identity status was dropped as a variable for the second set of regression analyses. Altogether, 55% (51% adjusted) of the variability on career indecision was predicted by knowing the level of participants' vocational self-concept crystallization and ego-identity status in the two domains.

### *Rational and Experiential Thinking, Vocational Self-Concept, and Occupational Decision-Making*

The second research question asked if the disposition for rational thinking or experiential thinking, or both, were related to vocational self-concept crystallization and career indecision. Rational and experiential thinking approach scores were obtained by summing the items endorsed on the subscales of the REI that were relevant to each approach. The mean score for rationality was 68.19, with an assessed range of scores from 23 to 99. The mean score for experientiality was 67.56, with a range of 39 to 99.

A significant correlation was found between the vocational self-concept crystallization variable and both rational ( $r = .36, p < .01$ ) and experiential ( $r = .23, p < .01$ ) approaches to thinking. Both thinking approaches were correlated significantly with career indecision: rational thinking had a significant negative correlation ( $r =$

-.23,  $p < .01$ ) with the dependent variable, and experiential thinking had a lower but still significant ( $r = -.16$ ,  $p < .05$ ) negative correlation with career indecision. A low but significant correlation ( $r = .16$ ,  $p < .05$ ) was also found between the two thinking approaches.

A standard regression was independently performed on the rational and experiential approach variables, with vocational self-concept crystallization as the dependent variable, in an effort to determine the amount of variance each variable contributed separately to career indecision. Rational thinking [ $F(1, 199) = 28.95$ ,  $p < .001$ ] contributed 13% ( $R^2 = 0.127$ ), and experiential thinking [ $F(1, 199) = 11.26$ ,  $p < .001$ ] contributed another 5% ( $R^2 = 0.054$ ).

## DISCUSSION

The results of this study indicate a number of significant statistical relationships that serve to support the CIP model and the importance of self-knowledge to the occupational decision-making process. In addition, the possible mediating effect of rational and experiential thinking approaches was partially supported. The results described here align with the stated hypotheses as well as the CIP model of occupational decision-making proposed by Peterson et al. (1991).

The results noted here would suggest, as predicted, that there is a strong inverse relationship between vocational self-concept crystallization and occupational indecision. This is not surprising, as the literature is filled with research that supports the positive impact that a clear and certain vocational self-concept has on career decision-making and the limiting of indecision (Barrett & Tinsley, 1977; McAuliffe, Pickering, & Calliotte, 1991; Tokar, Withrow, Hall, & Moradi, 2003). Mean and range scores for the vocational self-concept variable suggest that this group of largely first-year psychology students have self-concepts that are well crystallized. Vocational self-concept correlated significantly in an inverse direction with career indecision, suggesting that, as predicted, the degree of vocational self-concept crystallization directly impacts career indecision.

The literature was less clear about the relationship between the development of ego identity and career indecision (Vondracek, Silbereisen, Reitzle, & Wiesner, 1999; Zagora & Cramer, 1994), but the results here indicate that the more established the identity, the less the likelihood of occupational indecision. The finding that identity status advancement lagged behind vocational development is supported by the literature.

The majority of students in this study were in the diffused or moratorium groups in both identity domains. This would suggest that the majority of students were neither initiating exploration into possible selves nor committing to possible (diffusion) selves, or they were in the process of self-exploration and moving toward achieving an identity but had not committed to future selves (moratorium). While the second group could be seen as figuring themselves out, the first group does not yet appear to be. What was surprising was the finding that identity status scores in the Interpersonal domain were more commonly in the more established status

groups (i.e., moratorium and achieved made up 72.3% of the participants in this domain) than were scores in the Ideological identity domain (i.e., moratorium and achieved groups made up only 53% of the total sample), and fewer still were in the less established groups (i.e., Interpersonal diffused and foreclosed 27.7% and Ideological diffused and foreclosed 47.0%). This is surprising because vocational identity is measured as part of the Ideological domain and in the literature frequently develops before the Interpersonal domain. This finding may be a result of the large gender imbalance and the tendency for females to develop in the interpersonal domain earlier than males (Lucas, 1997).

The significant correlations between the two domains of identity and vocational self-concept were expected, and these correlations suggest that they are measuring the same thing, with vocational self-concept being the better formulated of the two constructs for this group. The two constructs together accounted for more than half of the variability in indecision scores, providing support for the clear statement in the literature regarding the importance of a vocational self-concept and identity to the occupational decision-making process (Wallace-Broschius, Serafica, & Osipow, 1994).

In the literature, a rational thinking style was clearly supported as positively related to effective cognitive processing of occupational and self-information and the subsequent decision-making process (Leong, Leong, & Hoffman, 1987; Singh & Greenhaus, 2004). The results here represent a strong indicator of an effect for personal cognitive variables on vocational self-concept crystallization and occupational indecision.

A moderate but significant positive correlation was found for both rational and experiential thinking and vocational self-concept crystallization. Moderate but significant negative correlations were found for rational and experiential thinking and indecision. Rational and experiential thinking styles did appear to contribute to the variability in vocational self-concept (13% and 5%, respectively). More recent research (Krieshok, Black, & McKay, 2009) has suggested that rational and intuitive processes work in tandem toward effective decision-making. Structural equation modelling (SEM) would have provided evidence to support or disconfirm the effect of thinking style on the relationship between vocational self-concept crystallization and indecision, and this would be a useful direction for future research.

#### CONCLUSION, LIMITATIONS, AND FURTHER RESEARCH

Many arts students, particularly those in their first year, are not career decided and may have actually chosen an arts degree program because of the flexibility it provides in comparison to more structured degree programs in the sciences (Porter & Umbach, 2006). For students in the first year of their degree program, self-concept and identity issues are still being resolved (Nauta & Kahn, 2007). Despite the limiting factors of using this group, this particular age group is well suited to the nature of the study and the variables considered. Super (1980) would expect this particular group to be nearing the end of the exploratory stage and in the

midst of tentative or realistic choices of vocation, a prime time to be assessing their decision-making status and the skills they have available for negotiating a decision.

A second limitation is the potentially vast number of alternative variables that may impact the occupational decisiveness of the participants but are not assessed here. Some researchers (McKay, Bright, & Pryor, 2005) have expressed criticism of so-called trait-matching models that attempt to identify traits, such as rationality, that help or hinder the decision-making process rather than approaching individual decision-makers holistically. The fact that any number of variables could have been assessed suggests a limitation in how much the variables chosen here actually represent the variability in occupational decision-making.

Finally, the lack of demographic differentiation by ethnic background constitutes a limitation, as this study does not address the increasing diversity of students attending Canadian universities. Mau (2004) studied the career indecision of college students from diverse ethnic backgrounds and found a greater experience of career indecision for Asian American undergraduate students compared to their White American peers.

As depicted in the literature devoted to the CIP model (Peterson et al., 1991), self-knowledge and occupational knowledge are two separate domains, theoretically speaking, each contributing to the decision-making process at the level of the decision skills domain. Based on the literature and the present research, an adjustment to the present state of the CIP model may be warranted. The proposed change would be to recognize the interaction of self- and occupational knowledge well before they are brought forth in a problem-solving situation. When new information is integrated with existing schemas, the integration process makes use of any schemas that are relevant and add meaning to the new information regardless of the domain.

Peterson et al. (1991) considered, from a theoretical standpoint, how the self-concepts so important to occupational decision-making develop in readiness for a problem-solving situation. This study provides empirical support for the relationship between vocational self-concept and occupational decisional status, as it would appear that a clear and certain vocational self-concept does in fact preclude occupational indecision and facilitates the decision-making process. These findings speak to the practice of career counselling in the sense that much of the counselling presently done in career counselling settings involves the identification of semantic traits followed by efforts to match these traits to occupations. Counsellors would be well advised to facilitate the examination of the development of these traits and the experiences (episodes in memory) that support them. This would involve exploration of episodes on both the self- and occupational-knowledge sides of the CIP pyramid. Engaging in these sorts of exercises should increase the clarity of occupational self-concepts and contribute to more effective decision-making.

The close relationship between vocational self-concept and ego-identity, in particular the ideological domain that includes vocational identity, was also supported. As Marcia (1966) and Erikson (1968) both contended, vocational identity is one of the first to develop. Given that identity is conceptualized in the literature

as the level of differentiation and integration of the self-concept (Harren, 1979) and that the self-concept refers to the occupationally relevant traits the individual attributes to him or herself, it would seem that the crystallization of vocational self-concept might facilitate the formation of the vocational identity. The question of how, specifically, vocational self-concept and ego-identity status are related is an area for future research.

#### IMPLICATIONS FOR COUNSELLING PRACTICE

One area of particular interest to counselling practitioners should be the impact of experiential input into self-knowledge and occupational knowledge. The results of this study indicate that experience and episodic memory may represent key, and often untapped, areas of knowledge for students in the exploratory stage of occupational development. Eyler (2009) suggested that experiential learning is a practical avenue for students to “transform inert knowledge into knowledge-in-use” (p. 24) that will help them with career transitions and decision-making. The results of future work in this area may suggest the need to examine courses or experiences that contribute to the clarification of vocational identity among students (Poe, 1991; Taylor, 1985, 1988).

Earlier research (Blocher & Schutz, 1961) considered the possible effect that vocational role-playing opportunities might have on the ways that vocational self-concepts are tested and crystallized. For instance, Taylor (1988) found evidence to suggest that college internships contribute to the clarification of vocational self-concept. The literature has been quite clear that the past approach of providing information in the face of occupational decision-making has not been overly effective (Krumboltz & Worthington, 1999; Savickas, 1999). At the initial information gathering stage of the information-processing model, it may be that experiences are the fundamental difference between those who struggle with occupational decisions and those who do not. It would be useful to determine whether the problem of career indecision is one of students not having enough experiences or possibly not the right kinds of experiences. As the research here suggests, it may in fact be the case that they do not know how to reflect on and analyze the experiences they had in a manner that allows them to add key information from the experience to the abstract store of knowledge that contributes to vocational self-concept.

This research has implications for counselling practice in at least three areas. First, it prescribes how students and career clients ought to make decisions, taking into account the semantic self-knowledge typically gleaned from career assessments but also acknowledging the potential benefits of considering experiences. Shiloh and Shenhav-Sheffer (2004) cautioned that although a rational thinking style may be necessary for dealing with decision-making difficulties, both modes of processing are likely advantageous for different purposes. As such, counsellors would be advised to acquaint themselves with the literature regarding different approaches to decision-making and offer their clients assistance in making decisions using both modalities.

Second, the research in this area makes a clear case for the need to encourage young people to get as much and as diverse experience as they can. Counsellors then play a pivotal role in helping process the episodes clients bring to counselling, and assisting them in using those episodes to engage in the crystallization of vocational self-concepts.

Finally, the concept of protean career attitudes has very recently been identified as an important determinant of career success (De Vos & Soens, 2008). Protean career attitudes reflect the degree to which workers manage their own career paths in a self-directed way (Hall, 2002). Job attitudes are related to experiences in the sense that one's perception of an event and the attitudes that are derived from the experience are modified by the initial mood experienced, which then influences the interpretation of the event (Muja & Appelbaum, 2012). From a counselling perspective, this speaks to the necessity of helping clients align past experiences with current attitudes and future expectations. Examining episodes and encouraging workers to attend closely to their own communication with peers, families, colleagues, and employers may be the most effective approach for avoiding decision-making difficulties.

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