IDENTITY-PROCESSING STYLE AND DECISION MAKING THEORY:
FACTORS TO CONSIDER WHEN ADOLESCENTS ARE DECIDING UPON A CAREER

by

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While taking a personological approach to decision making theory, this thesis addresses the issue of how adolescents make occupational decisions. Implicit in this thesis is the idea that a personological approach to decision making has theoretical and practical significance when it is conducted through a personality orientation. The personality orientation used to examine adolescent decision making is the social cognitive theory of Berzonsky's identity-processing styles.

Based on Berzonsky's identity-processing styles, 63 adolescents were classified as Informational, Normative and Diffuse/avoidant for assessing the extent compensatory (high demand) and non-compensatory (reduced-demand) processing was used in an occupational choice situation that varied in cognitive complexity. Additional interest was also directed at determining whether the identity-processing styles reflected different intrinsic or extrinsic value preferences in their final choices.

All processing data was derived through a computerized information acquisition system called MOUSELAB. As hypothesized, the three identity-processing styles differed significantly in cognitive strategy usage and search behavior. Informational adolescents were seen to use a compensatory additive linear procedure; that is, they searched a large amount of information, in a constant fashion, for an extended period of time. Normative adolescents were seen to use a non-compensatory conjunctive
procedure; that is, they searched a smaller amount of informa-
tion, in a selective fashion, for a shorter period of time. Diffuse/avoidant adolescents were seen to use a non-compensatory elimination-by-aspect procedure; where the amount, selectivity and time of search was similar to the Normative adolescents. In regards to search direction, Informationals and Normatives were seen to assess occupational choices through an alternative-based search pattern whereas; Diffuse/avoidants were seen to lean towards an attribute-based search pattern. These processing results were true only for the high information load condition. Finally, as expected theoretically, value preferences were seen to vary according to an adolescent’s identity-processing style. When making an occupational selection, Informational adolescents placed more emphases on intrinsic values (Feeling of Self-fulfil-
ment, Intellectual Stimulation, Autonomy etc) whereas Normative adolescents placed more emphases on extrinsic values (Authority, Prestige, Wage etc). Diffuse/avoidant adolescents oscillated between the two value systems.

Implications for decision making theory, applied suggestions for professionals counselling job-seeking adolescents and limitations of the study are discussed.
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CHAPTER ONE
INTRODUCTION

It is apparent we are now living in a time of increasing technological change and complexity. As a result, it is reasonable to assume that the adolescent of today is now exposed to an array of more challenging occupational possibilities than ever before. However, as it is noted in the literature, such increase in occupational opportunity does not come without its own cast of problems (Brown, 1984; Davis & Lofquist, 1984; Klein & Wiener, 1977). While it is likely over time the adolescent will have opportunity to choose another occupation (Super, 1957, 1983), it is the extent of today’s educational training and personal investment that suggests an initial occupational choice could have continued importance throughout life (Super, 1980). Thus, irrespective of the opportunity the adolescent has for selecting from amongst various careers, choosing that career now carries a sense of permanency with it. Add this feel to the fact that young people now have less time to consider various careers because most require an early educational commitment and; one can then appreciate some of the pressure the adolescent now faces in choosing the modern career. It is within this ‘real world’ context that this author will look at decision making, in particular, adolescent decision making.
Theoretical Issues and Approach

While literature notes that most research on decision making is task contingent when it comes to search and choice (Abelson & Levi, 1985; Gati, 1993; Jacoby, 1989; Pitz & Harren, 1980), few of these studies have looked at what the decision maker brings personologically to the decision making process (Ford et al., 1989). It seems decision theorists (Payne, 1976, Payne et al., 1993) have overlooked a fundamental proposition in psychology, Behaviour = f(Person, Task), where decisional outcome is contingent on the decision maker's characteristics, the task situation, and the resulting internal representations thereof (Mischel, 1973). Or as Hunt et al. (1989) note, task contingent processing can "hardly exhaust the varieties of human choice" (p. 436). Decision making is not only driven by the task per se, but it is also the product of one's feelings, interests, motivation and personality (Taylor, 1984). Thus, to acquire a more complete understanding of decision making as it occurs in the 'real world', theorists should pay greater attention to the decision maker's personal qualities; that is, how certain characteristics common to the decision maker are related to those processing procedures that constitute decision making theory. In doing so,  

1Similar to Alker's (1971) notion of personologism, a personological orientation consists of stable person-centred characteristics (traits, world views, cognitive styles) that influence or determine behavioral variation (Wright et al., 1985). What a decision maker brings personologically to the decision making process is a unique manner (style) for addressing the particular problem. This decisional manner is comprised of developmental, psychological and sociological elements.
this author believes theorists will then be in a better position to facilitate a person's decision making process.

Using occupational choice as a problem set, this author will investigate the extent that psychological orientations common to adolescence are related to decision making theory (Gati, 1993; Payne, 1976, Payne et al., 1993; Pitz & Harren, 1980). Noting the adolescent characteristic in this study, its personological dimension is principally Eriksonian (Erikson, 1963, 1982), as it is operationalized in Marcia's (1980, et al., 1993) identity status research. However, where Marcia's identity status theory is seen to rest on certain psychoanalytic premises, this thesis will follow the social-cognitive approach of Berzonsky's (1988, 1989, 1990) identity-processing styles. As a social-cognitive approach, it will be seen that Berzonsky's theoretical orientation is suitable for looking at decision making theory, a suitability that not only provides the cognitionists with an important personological perspective, but in doing so, suggests an interesting cognitive perspective for theorists to study adolescent decision making. Finally, where research in decision making has documented decisional performance from an input-output (stimulus-response) perspective (Newell & Simon, 1972; Billings & Marcus, 1983), to this author's knowledge none have looked at the 'in-process' aspects of decision making through a psychosocial orientation.
Rationale

As a psycho-social model, Berzonsky’s (1988, 1989, 1990) identity-processing style theory is interested in how an adolescent searches information. Essentially, Berzonsky sees an adolescent’s search as varying in accordance to an underlying psychological structure (Erikson, 1963, 1968, 1982). Depending on how this structure is ontologically experienced, Berzonsky suggests three identity-processing styles: a) the Informational processing style where search is open, flexible or unconditional in utilization; b) the Normative processing style where search is closed, rigid or conditional in utilization and; c) the Diffuse/avoidant processing style where search oscillates between an open/closed, flexible/rigid or unconditional/conditional form of utilization. Where the implied psycho-social structure above is essentially Eriksonian, it is Berzonsky’s treatment of psycho-social search where his theory suggests a new social-cognitive emphasis.

For Berzonsky et al. (1992, 1993), each identity-processing style is discernable through four social-cognitive elements: experiential openness (Costa & McCrae, 1978); introspectiveness (Hansell et al., 1986); personal versus social identity receptiveness (Cheek & Briggs, 1982) and cognitive motivation, as in

\[\text{It is important to note this author is sensitive to the problem of using general and impersonal descriptors to describe human phenomena. While concepts like Informational, Normative and Diffuse/avoidant are conceptually convenient, as a reminder of their empirical limitations and inferred humanness, they will always be capitalized throughout the thesis.}\]
one's 'need for cognition' (Cacioppo & Petty, 1982). It is in relation to these social-cognitive variables that this author is suggesting Berzonsky's identity-processing styles share important similarities with those cognitive processing procedures that constitute decision making theory (Gati, 1993; Payne, 1976, Payne et al., 1993; Pitz & Harren, 1980). In other words, not only are the cognitive strategies of decision making theory task contingent responses of a person's 'fixed capacity' to process information (Simon, 1957, Tversky, 1969, 1972), but in an isomorphic sense they are also personological extensions of a larger psychological orientation. While more conceptual detail is provided in the next chapter, this author is suggesting that during decision making, Berzonsky's Informational adolescents have an inclination to use a complex, high processing demand (compensatory) procedure whereas, Normative or Diffuse/avoidant adolescents have an inclination to use a simplified, low processing demand (non-compensatory) procedure. It seems the manner in which an adolescent cognitively interacts with the world is very much related to how he/she perceives the world, a perception that is in part directly related to the youth's identity-processing style.

Where the main interest in this thesis is cognitive strategy usage via Berzonsky's (1988, 1989, 1990) identity-processing styles, the author is also interested in determining the extent informational quality and the styles are related (Blaycock & Rees, 1984). Because Berzonsky's identity-processing styles are
actually 'world views' - structured schemata from which people interpret events and 'chart the course of their behaviour' (Kelly, 1955, p. 740) - it stands to reason that adolescents who hold them may have qualitative preferences for certain types of data. Exactly what consequence data preference could have for the adolescent who is engaging in occupational search is be to determined.

Cognitive Style Revisited

From the onset, it is to be noted, this author will view Berzonsky's identity-processing styles from within a cognitive style orientation, a broad-based orientation that consists of developmental, psychological and sociological properties. It is felt not only does this cognitive style approach support the author's personological emphasis, but it also helps to mediate conceptually between the separate fields of personality and decision making theory. However, in taking this approach, the author is aware that research on cognitive style has been inconsistent in its conclusions (Blaylock & Rees, 1984). It is this author's belief that this inconsistency is as much attributable to problems of conceptualization (Roby & Taggart, 1981; Schweiger, 1983; Taylor & Benbasat, 1980) as it is to empirical documentation (Huber, 1983). For example, voicing a need to conceptualize cognition in more practical ways, Robertson (1985) suggests the concept of style is wanting in scope and
authenticity. For this author, the problem with cognitive style comes from a dependency (explicit or implicit) on a neo-behavioral rationale for its occurrence; a rationale that also underlies the task contingent strategies of decision making theory (Newell & Simon, 1972; Simon, 1957; Tversky, 1969; 1972). However, as Messick et al. (1976) imply, the very idea of cognitive style suggests a wider scope than what is inferred in the cognitive strategies. That is, cognitive style should hold across various situations whereas task contingent strategies are seen to be situation specific (McKenna, 1984). Second, noting the presence of an empirical consistency in task contingent research, it seems there is a feeling (as in methodology) that cognitive style is only capable of similar consistency when tested separate from a more volatile and less controllable concept of personality (Pratt, 1980; Zmud, 1979). It is this author’s belief that some of the inconsistency found in cognitive style research (Blaycock & Rees, 1984) is attributable to cognitionists failing to properly consider the concept within a defining personality orientation (Reneau & Grabski, 1987). Finally, where decision making theorists (Beach & Mitchell, 1978) are seen to explain processing variation through a task contingent ‘cost/benefit’ theorem – cognitive effort and decisional accuracy are reciprocally related – there is a feeling that the variation common to cognitive style is operationally unexplainable (Blaylock & Rees, 1984; Huber, 1983; Robey & Taggart, 1981;
Schweiger, 1983; Taylor & Benbasat, 1980). In taking a personality orientation, this author is suggesting the equivalent regulatory system for cognitive style (one that does provide a form of decisional consistency) can only be personological in emphasis. It is apparent, as the thesis progresses, Berzonsky's identity-processing style theory is able to address these conceptual issues.

Methodological Approach

Because this thesis is interested in the defining characteristics of adolescent decision making, it will use a standard process tracing technique as its methodology (Bettman & Jacoby, 1976; Einhorn & Hogarth, 1981; Payne, 1976; Payne et al., 1978). Specifically, the methodology in this study consists of a computerized information acquisition system called MOUSELAB (Johnson et al., 1989). To assure operational congruency between the personological and decision making positions of this study, cognitive distinctions such as non-compensatory and compensatory processing are defined in the same manner as they are in decision making theory (Gati, 1993; Onken et al., 1985; Pitz & Harren, 1980). Berzonsky's (1988, 1989, 1990) identity-processing styles are determined through his revised psychometric test - the Identity Style Inventory (Third Edition). Finally, two additional tests are used for establishing the testing environment of this thesis.
Statement of Problem

The questions this thesis addresses are: To what extent does an adolescent's identity-processing style impact on the decision making process? Is there a connection between an adolescent's identity-processing style and those heuristics a decision maker uses in processing information? Could Berzonsky's (1992, 1993) identity-processing styles help a counsellor to identify potential information a particular adolescent would find appealing when making an occupational decision? To what extent does an adolescent's identity-processing style mitigate the salient characteristics of the task contingent argument (Ford et al., 1989)? Finally, is the cognitionist's objective of assisting the person to improve his/her decision making (Pitz & Harren, 1980) further served within a personological model?

Models and Orientation

The astute theorist will note that in this thesis two world views (Reese & Overton, 1970) are present - one that is inherent to decision making theory and the other that is inherent to personality theory. While it is apparent that the idea of individual differences in decision making theory is conceptually different from that found in personality theory, this does not mean that a personological approach to decision making is not valid. Whether the person is adapting to the specific demands of a task (Payne, 1976) or to life's pressures in general (Berzonsky, 1992b), in
both instances, he/she is perceived as adapting to something. In this sense, the conceptual scope of personality theory does not so much conflict with decision making theory, as it supplements it.

**Significance of the Study**

The significance of the study is discernable on three related levels; two theoretical and one applied.

First, in noting that the task contingent approach to decision making has dominated research in this area for the last three decades (Gati, 1993; Payne et al., 1993; Pitz & Harren, 1980; Simon, 1957; Tversky, 1969, 1972), it seems a milieu has emerged that has inadvertently minimized the importance of the decision maker's personological contribution to decision making. As a result, in showing empirically how personality and decision making theory are related, it is hoped that some of the emphases cognitivists place on the task contingent argument will abate. For only then, does this author believe other ideas will suggest themselves for facilitating a person's decision making performance; ideas that properly take into account the relativistic characteristics of the decision maker.

Second, in operationalizing Berzonsky identity-processing styles through an empirically inclined decision making model, it will then be possible to provide psycho-social theorists with a recognized method for analyzing adolescent decision making. Not-
ing the period of adolescence (Erikson, 1963, 1968) is considered to be a time when important life decisions are being made, such a tool can only help those who are students of the adolescence experience. Meaning the relativistic characteristics mentioned above are actually psycho-social properties (Marica et al., 1993). In sum, this author is suggesting a decision maker as person viewpoint.

Finally, since this thesis uses occupational choice as its problem set, it finds itself in the position to say something about an adolescent's occupational decision making, a task that Erikson (1963, 1968, 1982) believes is the primary issue facing adolescent development. From the findings of this thesis, it is hoped educators will be in a knowledgeable position to design curriculums that personally facilitate a student's decision making; a curriculum that encourages the student to continue to search where he/she may have otherwise stopped. Noting our educational system is now undergoing reform, that is, making career planning a requirement for graduation, it is this author's opinion that this study is rather timely.

Definitions

Decision Making

Decision making consists of gathering and processing information. Gathering information as in searching available decisional material. Processing information as in cognitively evaluating
the information that was gathered. In this thesis, because this gathering and processing of information always occurs prior to making a decision, as processes they are considered to be pre-decisional activities. The goal of these pre-decisional activities is to make a choice from amongst a set of alternatives (Payne et al., 1993).

Cognitive Style

Essentially, cognitive style is concerned with a person's manner of approach to problem solving, that is, to the general or expanded 'how' of performance. In the context of this thesis, Hunt et al. (1989) state, "... [D]ifferences in ... perception and assimilation of information amount to 'styles' of thinking which define how a person comes to grips with complex problems both in terms of conscious strategies and unconscious habit" (p. 438). Or as Messick et al. (1976) suggest, "... [C]ognitive styles ... are high level heuristics that organize and control behaviour across a wide variety of situations" (p. 6); whereas, cognitive strategies are more a function of the conditions of a particular situation (McKenna, 1984). Since perceiving and organizing information are seen to be expressions of a decision maker's personality (Witkin et al., 1977), it follows that cognitive style is considered to be inseparable from personality. Other terms in the literature that are similar to cognitive style are processing style, decision style and problem solving style (Ruble & Cosier, 1990).
All other terms that require clarification are fully defined as they appear throughout the thesis.
In decision making theory individual differences are essentially cognitive performance distinctions - performance distinctions that are intricately connected to task contingent properties (Payne et al., 1993; Pitz & Harren, 1980). In fact, in a neo-behavioral fashion, Newell and Simon (1972) go so far as to imply that to know the task is to know the decision maker. Alternatively, in the context of this thesis, individual differences are viewed as being broad-based processing styles (Messick et al., 1976), processing styles that are comprised of developmental, psychological and sociological properties (Berzonsky, 1989, 1990, Berzonsky et al., 1992, 1993). As previously noted, the issue of processing style in decision making research has been problematic (Blaycock & Rees, 1984). Operational inconsistencies, different measures and questionable psychometrics have all contributed to this problem (Huber, 1983; Robey & Taggart, 1981; Schweiger, 1983; Taylor & Benbasat, 1980). While these reasons are empirically sufficient within themselves to discourage research in this area, the fact is, little attention has been directed towards viewing processing style from a more encompassing personological perspective.

The following review of literature is divided into three sections. The first section addresses the issue of cognitive
style as it is used in this thesis. The second section focuses on Berzonsky’s (1989, 1990, 1993) identity-processing style theory. Finally, the third section places Berzonsky’s theoretical position within the context of decision making theory (Pitz & Harren, 1980).

SECTION I: THE ISSUE OF COGNITIVE STYLE

Essentially, this section accounts for the possibility that a paradigmic gap (Reese & Overton, 1970) may exist between Berzonsky’s identity-processing styles and decision making theory (Pitz & Harren, 1980). As a result, the concept of cognitive style is used to mediate between the two theoretical positions. It is through the idea of cognitive style that the author is attempting to establish Berzonsky’s conceptual proximity to decision making theory. While it is important to note, it is not the intention of this author to resolve those controversies that surround the issue of cognitive style (Blaycock & Rees, 1984), the fact is, viewing style through a personality doctrine could provide a conceptual base from which to build a more encompassing personological approach to decision making theory.

Cognitive Strategy and Cognitive Style

Where on the one hand, it is necessary to establish Berzonsky’s (1988, 1989, 1990) relationship to decision making theory, care should be taken so as not to confuse his styles
with the cognitive strategies that comprise the decision making process. Essentially, this problem is one of conceptual definition.

As depicted in the literature, cognitive strategies are actually the quantitative tools of rational decision making (Payne et al., 1993; Pitz & Harren, 1980). As tools, the cognitive strategies are not susceptible to 'more' or 'less' distinctions, meaning either a particular strategy is used or it is not (McKenna, 1984). Because the main function of the strategies is to minimize the processing demands of the task when necessary (Simon, 1957, 1979; Tversky, 1969, 1972), they are considered to be situation specific (McKenna, 1984; Messick et al., 1976).

In contrast, cognitive style is concerned with the qualitative manner of decision making (Hunt et al., 1989; McKenna, 1984; Messick et al., 1976). As a dynamic process, one's style can range from one type of cognitive functioning to another type of cognitive functioning (Guilford, 1967; Pask, 1976; Witkin, 1976). In fact, it could be through the unique use of the cognitive strategies that a decision maker's cognitive style is manifested (Chung, 1991). As a personological concept, style suggests a scope that is applicable over a variety of situations.

McKenna (1984) notes there is little empirical reason to think cognitive style is anything different from the cognitive
strategies. Essentially, cognitive style has been operationalized (conscious or otherwise) from within a task contingent (S-R) doctrine (Newell & Simon, 1972; Robertson, 1985; Witkin, 1976). However, for cognitive style to explain 'real world' decision making, it has to be set within an orientation that complements its interpretative breadth. As a result, it is this author's belief that the concept of cognitive style is better served through a personality theory that is broad-based and sensitive to decisional issues. Berzonsky's (1988, 1989, 1990, 1993) theory concerning the identity-processing styles meets this requirement.

Cognitive Style as Personality

Acting as a mediating concept to decision making theory, this author views cognitive style as being inseparable from personality theory (Reneau & Grabski, 1987).

For example, paralleling Berzonsky's (1988, 1989, 1990) Informational and Normative identity-processing styles, Schroder and Suedfeld (1971) differentiated people as being abstract or concrete information processors. Abstract processors are seen to have the ability to handle the cognitive demands of complex problems. As high order compensatory processors, these people can reach an effective decision on a limited amount of information. The crux of this processing style is the integration of informat-

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3 Note, despite what appears to be conceptual similarities between cognitive strategy and style, little research has been conducted to show exactly how they are related (Berlin & Languis, 1981).
ion. In comparison, concrete processors are seen to be highly sensitive to cognitive strain, including that which can occur at the lower levels of decisional complexity. As low order processors, concrete people are seen to restrict the amount of information they are willing to process.

Harren (1979) proposed people have three distinct decision-making styles; rational, intuitive and dependent. The rational decision maker is seen to base decisions on self-relevant information, is highly active in seeking information, approaches decision making in a linear fashion and willingly accepts personal responsibility for those decisions made. The intuitive decision maker tends to base decisions on emotional feelings, is holistically centred and, also accepts personal responsibility for his/her decisions. While the processing distinctions for the dependent decision maker are not as clearly defined as they are for the rational or intuitive decision maker, a clear difference is their tendency to delegate to others responsibility for making their decisions. While Harren’s typology does not fully correspond to Berzonsky’s identity-processing styles, the allude to social component has important implications for his Normative and Diffuse/avoidant processing styles.

**Cognitive Style and Response Variation**

While cognitive stylists imply people have predominant modes of thinking that are specific onto themselves (Guilford,
1967; Witkin, 1967, 1976; Pask, 1976; Mitroff, 1983; Hunt et al., 1989), this does not mean that on occasion a person could not exhibit a different cognitive method (Robertson, 1985). However, it is important to note, it is exactly this notion of cognitive variation that has resulted in cognitionists playing down the topic of cognitive style (Huber, 1983). This is particularly interesting considering early decision making theorists also had problems with cognitive variation when it came to explaining strategy selection (Payne et al., 1993), a variation that was eventually accounted for through the cost/benefit theorem (Beach & Mitchell, 1978). Thus, in a likewise fashion, if a cognitive stylist is to contribute personologically to decision making theory, he/she will have to account for the decisional variability that constitutes cognitive style research. That is, the stylist must be able to differentiate across decision makers in a logical and consistent fashion. In regards to Berzonsky’s identity-processing styles, an adolescent’s decisional variability is explained through a social cognitive component, the ‘need for cognition’ (Cacioppo & Petty, 1982, 1984).

SECTION II: BERZONSKY’S IDENTITY-PROCESSING STYLES

Since Berzonsky’s (1988, 1989, 1990) social cognitive account of identity development is actually a process extension of Marica’s (1980, Marcia et al., 1993) psycho-social theory, the latter is briefly presented so as to provide further conceptual
clarification.

Marcia's Identity Statuses: Berzonsky's Theoretical Foundation

According to Erikson (1968), the primary task of adolescence is to establish a clear and stable sense of identity (Berzonsky & Neimeyer, 1988); an identity that is not only congruent with the past (childhood) but is also consistent and unique within the present (adulthood) (Marcia, 1980). Of particular importance to the adolescent period is the realization of identity within the world of work. How the adolescent arrives at this realization is seen to depend on his/her psycho-social orientation where search and commitment play a vital role.

Focusing exclusively on Erikson's (1963, 1982) psycho-social stage of 'ego identity versus identity confusion', through the process variables of 'exploration' and 'commitment', Marcia (1980, et al., 1993) was able to delineate four distinct identity statuses: Identity Achievement, Moratorium, Foreclosure and Identity Diffusion. While seen to occur within distinct (thematic) domains, each of these identity statuses represents in sum a particular psycho-social resolution or level of development.4 For example, Identity Achievement consists of a commitment (belief

4Aside from the fact that occupation is one of Marcia's (1980; et al., 1993) domains, their specific nature (ideology, religion, friendship etc) is not really an issue in this thesis. However, the reader should note that an adolescent could be at the same time Identity Achieved in the occupation domain and Identity Diffused in the religion domain etc (Matteson, 1975). It will become apparent when describing the thesis's processing exercise that it is set entirely within the occupational domain.
system) that has been 'constructed' through active search; Moratorium consists of a commitment that is in process where acute search is ongoing; Foreclosure consists of a commitment that has been externally 'conferred' in the absence of search and; Identity Diffusion consists of little or no commitment where search is ongoing and arbitrary in direction. In psychoanalytic terms, each identity status reflects a different degree of 'ego strength' or personal competency. In other words, to 'construct' an identity through search is to acquire the personal competency (maturity) to deal with the novel, the unexpected or the ambiguous situation. As such, identity formation can be seen to move from the closed to the open; from the fixed to the dynamic; from the rigid to the flexible; or, for Marcia, from the Foreclosed (super ego) to the Identity Achieved (ego ideal). Mature identity and its approximations thereof are search contingent. Finally, it is important to note, in a recent book, Marcia et al. (1993) indicated that the identity statuses are not exclusive to a psychoanalytic interpretation, as dynamic and encompassing properties they can also be viewed within a social-cognitive perspective (Berzonsky, 1988, 1990, Berzonsky et al., 1992, 1993).

Early Social-cognitive Research on the Identity Status

Research indicates the identity statuses vary on a number of social-cognitive dimensions (Slugoski et al., 1984; Grotevant
& Adams, 1984; Read et al., 1984). For example, Slugoski et al. (1984) found Identity Achieved and Moratorium people exhibited greater integrative complexity in social cognitive reasoning than Foreclosed and Identity Diffused individuals. Foreclosed and Identity Diffused people had difficulties considering multiple or conflicting sources of information. Grotevant and Adams (1984) found Foreclosed and Identity Diffused people tended to take an other directed or externally derived approach to problem solving or decision making. Read et al. (1984) found Foreclosed and Identity Diffused individuals were apt to ignore relevant information because of a restricted attention span. With less restricted attention spans for Identity Achieved and Moratorium people, information processing was found to be more encompassing.

Marcia's (1980, et al., 1993) conceptualization of the four identity statuses has inspired extensive research. Marcia's criticism of this research is that it tends to focus on the output of a particular status, thereby ignoring its dynamic properties. In calling for a new direction in research, Marcia (1980) stated, "... it may be productive to begin thinking of identity in terms of on-going processes ... instead of identity status categories and their proliferation" (p. 578). It is Berzonsky's (1988, 1990) research in social-cognition that depicts the identity statuses as dynamic processing styles.
Berzonsky’s Identity-Processing Styles

In association with Marcia’s (1980, et al., 1993) identity statuses, Berzonsky found people differed stylistically when processing self-relevant information. Combining Marcia’s Identity Achievement and Moratorium statuses, Berzonsky proposed three corresponding processing orientations: an Information processing style; a Normative processing style and; a Diffuse/avoidant processing style. Making specific reference to Kelly’s (1955) personal construct theory, Berzonsky see each identity style as representing a distinct schema or world view, a world view that the person continually validates or changes through a self-confirming exercise. Again, psychological structure and information processing are seen to be intricately connected. How an adolescent psychologically perceives the world is very much a part of how he/she will ‘act’ upon the world.

Informational Processing Style

Berzonsky et al. (1992, 1993) see Information-orientated people as being highly active in gathering and processing self-relevant information. Since Informationals are self-defining in an intra-personal sense, their decision making processing tends to be elaborate and intense. At the centre of this processing orientation are the values, beliefs, and goals of Marcia et al.’s (1993) Identity Achievement and Moratorium statuses. Because Informationals have a high internal locus of responsibility (Rotter, 1966), they seem to exhibit a comfortableness in
dealing with the ambiguous or novel situation. In this regard, Berzonsky sees Informationals as objective processors where the validity of the data to be processed is of central concern (Petty & Cacioppo, 1986).

**Normative Processing Style**

Normative orientated people are seen to be selective in gathering and processing information, especially if the information to be processed is thought to threaten some aspects of their core self (Berzonsky et al., 1992). Since Normative people define themselves through, and are highly protective of, the expectations and prescriptions of others (family, peer group or significant other etc), their decision making often has a conditional quality to it. Where, for Normatives, data per se is expected to fulfil certain 'collective' expectations or goals, this data in its own right may not always be valid or rationally sound. As externally derived people (Rotter, 1966), Normatives seem less comfortable in dealing with the ambiguous or novel situation. In fact, it is with the ambiguous situation where the full extent of their cognitive rigidity becomes most apparent. As such, Berzonsky (1993) considers Normatives to be 'biased' processors (Petty & Cacioppo, 1986). Finally, it should be noted, the identity status that uses this processing orientation is Marcia's (1980) Foreclosed status.

**Diffuse/avoidant Processing Style**

Diffuse/avoidant orientated people tend to gather and pro-
cess information in a seemingly haphazard fashion (Berzonsky, 1988, 1990, Berzonsky et al., 1992, 1993). At one time, Diffuse/avoidant people can be intense and selective, at another time, they can be indifferent or random. Berzonsky notes procrastination, avoidance and superficiality mark this processing style. Often, the Diffuse/avoidant will determine the validity of his/her data on whether it is extrinsically rewarding or publically fulfilling. In fact, much of a Diffuse/avoidant's self-definition is grounded in 'public self-components' such as popularity, reputation, and impression management (Berzonsky, 1989, 1990). While Diffuse/avoidant people are externally derived (Rotter, 1966), in comparison to Normatives, Berzonsky et al. (1992, 1993) imply this as being more attributable to egocentric pursuit than 'collective' identification. Thus, depending on what the immediate situation has to offer relativistically, Diffuse/avoidant people can be both 'objective' and 'biased' in their information processing. The identity status that uses this processing orientation is Marcia's (1980) Identity Diffusion status.

Social-Cognitive Factors

Through various tests, Berzonsky et al. (1992, 1993) showed the identity styles are assessable on four social-cognitive aspects: the need for cognition (Cacioppo & Petty, 1982); introspectiveness (Hansell et al., 1986); experiential openness (Costa & McCrea, 1978); and personal versus social identity emphasis.
(Berzonsky, 1989, 1990; Creek & Briggs, 1982). Since intro-spectiveness (as in being open to one's inner self) is conceptually similar to experiential openness (as in being open to the totality of one's experience as it is lived), only three social cognitive factors are addressed in this thesis. In other words, one's introspectiveness is felt to be sufficiently represented within the notion of experiential openness.

Need for cognition is characterized by active information processing (Cacioppo & Petty, 1982), effective problem solving (Heppner et al., 1983) and concrete or polarized evaluations (Cacioppo et al., 1984). The quality of the data to be processed is highly influential in the decision making process (Cacioppo, 1983). In a personological sense, the need for cognition pertains to one's liking or motivation to engage in general cognitive activity. While need for cognition is essentially viewed as a general characteristic (Cacioppo & Petty et al., 1993), Berzonsky et al. (1992, 1993) make it conditional to the processing of self-relevant information.

Experiential openness is characterized by an awareness of personal feelings, beliefs, ideas and values (Costa & McCrae, 1978; Hansell et al., 1986). To be experientially open is to be creative, insightful and personally flexible (McCrae, 1987; McCrae & Costa, 1985). Ego development or personal competency is positively associated with one's experiential openness (McCrae & Costa, 1980).
A personal versus social (collective or public) identity emphasis is characterized by a heightened focus on the private self or an equally similar sensitivity for the social self (Cheek & Briggs, 1982). To define one’s self with a personal or social emphasis is to take an intra-personal or inter-personal position. In a temporal sense, the personal and collective emphases are far reaching and long termed whereas; the public emphasis is more situational and short termed.

In regards to these social-cognitive aspects, Berzonsky (1989, 1990, et al., 1992, 1993) found Informationals expressed a high need for cognition, were experientially open and had a high personal identity emphasis; Normatives expressed a lower need for cognition, were experientially open in a conditional sense and had a strong collective emphasis and; Diffuse/avoidants expressed a lowest need for cognition, seemed experientially guarded or indifferent and were responsive to public sensitivities.

Differences Between Marcia and Berzonsky’s Theories

It is important to note, Berzonsky’s (1988, 1989, 1990) identity-processing style model differs from Marcia’s (1980, et al., 1993) identity status theory in the emphasis that it places on ‘exploration’ versus ‘commitment’. Where Marcia believes some people explore, some are committed and others are indifferent, Berzonsky believes all people in varying degrees are in a state of active search. Berzonsky is interested in how effective people
are as explorers; in particular, how they search and what they search. Marcia is more interested in commitment through the resolution of a psycho-social crisis where search plays an important role.

Finally, while Marcia et al. (1993) see the successful resolution of earlier psycho-social crisis (an ego strengthening process) as an essential requirement for realizing a more mature identity status (Identity Achievement), Berzonsky (1988, 1990) suggests all normal adolescents are cognitively capable of using his three identity-processing styles. Only in childhood does Berzonsky (1990, 1993) suggest that cognitive resources are sufficiently limited to constrain the processing orientation used. In other words, for Berzonsky, regardless of the adolescent’s pattern of psycho-social resolution, the identity-processing style used can also be attributed (in a predominant fashion) to personal, social and motivational factors. The implications of this ontological perspective becomes obvious when suggesting counselling approaches designed to facilitate decision making for the specific identity-processing styles.

In sum, this thesis is suggesting an adolescent’s identity-processing style has important consequences for decision making. For example, as implied above, some adolescents seem predisposed to gather with depth, most of the self-relevant information that comprises a decisional problem whereas, other adolescents seem more selective or even somewhat indifferent in gathering this
information. However, it is to be noted, whether an adolescent gathers a large or small amount of information does not necessarily mean a good (accurate) or bad (inaccurate) decision will be made. This will depend on two additional factors: a) whether the adolescent is 'willing to expend' the effort necessary to process the acquired information and; b) whether the adolescent has the expertise or confidence to process the information in an efficient manner etc. Herein, lies the distinction between the adolescent who makes the often without thought 'quick solution' decision versus one who is effective, efficient and adaptive in decision making (Pitz & Harren, 1980; Payne et al., 1993).

Having described Berzonsky identity-processing styles, this author will now place them within the context of decision making theory (Pitz & Harren, 1980). In doing so, the author will rely heavily on the operational rationale that has come to represent decision making theory (Payne, 1976, et al., 1993). However, as noted at the beginning of this chapter, where decision making theory is seen to emphasize cognitive performance and task properties (Simon, 1957; Tversky, 1969, 1972), this author will emphasize cognitive performance relative to the decision maker's personological orientation.

SECTION III: DECISION MAKING THEORY

A major theme in research on decision making is that decisional behaviour is largely contingent on the characteristics of
the task or context (Einhorn & Hogarth, 1981; Newell & Simon, 1972; Payne, 1976; Tversky & Kahneman, 1981) - where a change in the task can evoke a corresponding change in a person's decision making process. Considerable research has investigated the impact task components have on decision making. Where topics such as, task complexity (Billing & Marcus, 1983; Olshavsky, 1979; Payne, 1976), display format (Bettman & Kakkar, 1977, Schkade & Kleinmuntz, 1994), response mode (Billings & Scherer, 1988) and cue levels (Fisher, 1995; Huber, 1980) have received extensive research, less attention has been directed at what the decision maker brings personologically to the decision making process (Ford et al., 1989). For those reviews that did address the matter of decision-maker effects, nothing substantive has been reported to date (Abelson & Levi, 1985; Ford et al., 1989; Maule & Svenson, 1993; Zakay, 1990). As a result, it is this author's belief if decision theory is to achieve a more complete 'real world' understanding, researchers must increase their effort concerning decision-maker effects.

**Limited Capacity Processing**

In decision making theory it is noted when people make decisions, they will utilize certain heuristics (strategies) that keep the processing demands of the task within the limits of their cognitive capacity to process information (Onken et al., 1985; Pitz & Harren, 1980; Simon, 1957, 1979; Tversky, 1969,
1972). Adapting Newell and Simon's (1972) problem solving rational to the area of decision making, Payne (1976) empirically documented the decision maker's heuristic usage. When exposed to a complex decision, the decision maker will reduce its 'cognitive strain' through a 'simplifying' non-compensatory procedure. With task complexity reduced, the decision maker will then apply a more in-depth and demanding compensatory procedure (Payne, 1976, Payne et al., 1993). However, where task complexity is seen to predict strategy usage, researchers note individual differences are also apparent. For example, Bettman and Kakkar (1977), Payne (1976) and Klayman (1985) found a significant number of subjects did not vary in their strategy usage when exposed to strong manipulation of the task format. Noting the saliency (Payne et al., 1993; Pitz & Harren, 1980; Gati, 1993) of Simon's (1957) 'limited capacity' argument, the question arises how researchers can account for this processing variation? It is this author's opinion that the answer may reside in how the decision maker cognitively represents and interprets the information that comprises the decisional set.

Restructure of the Task Problem: Cost/Benefit Analysis

Theoretically, the decision making model is depicting a closed system where all normal decision makers are felt to have the same cognitive capacity for making decisions (Simon, 1957, 1972). However, theorizing that everyone has the same cognitive
capacity does not mean decision makers will use it in the same fashion (Gati, 1993). This will depend on how the individual cognitively organizes and interprets the incoming information. Often, the decision maker will organize the problem by mapping it onto his/her value system. It is the mapping of this information that provides the decision maker with a unique and meaningful template to interact in the world. Since the decision maker has a limited capacity to process information, care must be taken in allocating this resource over information that competes for attention (Pitz & Harren, 1980). As a result, the decision maker is constantly balancing between one’s limited capacity to process information with his/her desire to realize an optimal decision. In other words, a decision maker’s utilization of a cognitive strategy follows a cost/benefit procedure - where the selection of a strategy is a compromise between a decision maker’s desire to make an accurate choice with his/her desire to minimize its engendered cognitive cost (Beach & Mitchell, 1978; Ford et al., 1989). Whether a decision maker uses a compensatory strategy will depends on the extent that it increases or maintains decisional accuracy (Onken et al., 1985; Pitz & Harren, 1980). If accuracy is not improved or maintained then a less cognitively demanding non-compensatory strategy will be used instead.

For example, Krumboltz et al. (1982) and Payne et al. (1993) found decision makers will explore more information and take more time processing when the decisional alternative in question is
perceived as being consistent with their underlying values. Similarly, Beach and Mitchell (1978) found the decision maker will use a more analytical compensatory search procedure if the decisional problem is perceived as having high importance. As a result, it seems the selection of a cognitive strategy is not only task dependent per se, but is also driven by the decision maker's perception of the task (Gati, 1993).

Models of Decision Making

The full extent of a decision maker's selection of a cognitive strategy is seen in the compensatory and non-compensatory models (Pitz & Harren, 1980). These models show that integration of information and goal realization are as much a function of the task complexity as it is to the decision maker's preferences.

1. The Compensatory Model

In compensatory processing, the decision maker assesses each choice alternative (e.g. doctor) through its defining attributes (e.g. wage, working hours etc) where a disadvantage in one attribute (e.g. long working hours) is compensated for by an advantage in another attribute (e.g. high wage). The alternative with the highest overall rating in the decisional set is the decision maker's eventual choice. The goal of compensatory processing is to select the alternative that is most compatible with the decision maker's desires. The two compensatory strategies that have received the most attention in the literature are additive linear
and additive difference. (See Appendix E for a pictorial illustration).

In additive linear (AL) processing (Pitz & Harren, 1980), the decision maker examines in single fashion each alternative (choice) that comprises the decisional set. Each attribute (value) within the alternative is comparatively assessed and is then assigned in a compensatory fashion a subjective weight. These weights are then summed to give an aggregate score for the alternative being assessed. The alternative with the highest aggregate rating in the choice set is the one the decision maker selects.

In additive difference (AD) processing (Pitz & Harren, 1980), the decision maker assesses two alternatives on one attribute, then continues to compare the same two alternatives on the next attribute until all the attributes between them have been assessed. Each attribute pairing is noted for its difference. This difference is then weighted and summed in a compensatory manner so as to provide an overall score for each alternative. The alternative with the highest positive score is then retained and acts as a base to assess the next alternative in the decisional set. The process continues until only one alternative remains for consideration.

Because additive linear and additive difference processing involve in-depth comparison among the alternatives, dissonance is
a common occurrence (Gati, 1993; Payne et al., 1993).\textsuperscript{5} To minimize the effects of dissonance, the decision maker may reprioritize the alternative's defining attributes. Since it is theoretically impossible for an alternative to perfectly match a decision maker's ideal choice (Gati, 1993), the notion of compromise plays an important role in compensatory processing. As a result, it is expected a decision maker who uses compensatory processing should have the psychological disposition to cope with the dissonance engendered and have the willingness to implement compromise and changes when the situation demands it.

Finally, in regards to defining search characteristics, both additive linear and additive difference examine an equal amount of information over all choice alternatives. Additive linear is assessed in an alternative-wise direction (i.e. examines attribute values within an alternative) whereas additive difference is processed in an attribute-wise direction (i.e. examines attribute values across the alternatives). Both strategies are considered to be highly demanding as to the cognitive effort necessary for their implementation (Einhorn & Hogarth, 1981; Gati & Tibotski, 1989; Zakay, 1990). As a result, in theory, both should have a high probability for realizing an optimal decision.

2. The Non-compensatory Model

In non-compensatory processing (Pitz & Harren, 1980), the

\textsuperscript{5} No one alternative is best on all the attributes assessed.
decision maker determines from the onset a level of acceptance for each attribute category that formulates the decisional set. Any alternative that is seen to have an attribute that does not meet the decision maker's pre-determined criteria is eliminated from further consideration. For example, an alternative (e.g. doctor) that the decision maker initially finds appealing (e.g. 'high wage' combines with 'good use of skill') is eliminated because of an incompatibility with another attribute (e.g. 'lengthy training requirement'). In suggesting an 'all or none' approach to decision making, non-compensatory processing is not open to trading-off between attributes. As a result, the potential for dissonance is slight or nil since no conflicting attribute is present long enough to generate it (Payne et al., 1993). The two non-compensatory strategies mentioned most in the literature are conjunctive and elimination-by-aspect processing. (See Appendix E for a pictorial illustration).

In conjunctive (CONJ) processing (Simon, 1957, 1979) the decision maker considers each alternative one at a time in the order it appears in the decision set. Each relevant attribute within the alternative is assessed for its ability to 'satisfy' a decision maker's pre-determined minimum value. If an attribute fails to meet this minimum value, the alternative that contains it is immediately dropped from further consideration. As it is with elimination-by-aspect processing below, in conjunctive processing a weak attribute cannot be compensated for by a strong
attribute. In a situation where none of the available attributes meet the decision maker’s cutoff points, the level of evaluation is then lowered where the rules of conjunctive processing are again applied. Processing ceases as soon as the decision maker encounters the first alternative where all relevant attributes meet the decision maker’s cutoff points. Thus, a choice is usually made before all the information in the decision set has been assessed. Since conjunctive processing essentially involves a conditional assessment of an alternative, it is this author’s belief that dissonance does play an important role in its enactment. In other words, when a conditionally sensitive decision maker – one who holds a certain world view orientation – experiences dissonance, then the alternative responsible for its occurrence is discarded (Payne et al., 1993). As a result, the decision maker does not have to experience any potential discomfort, nor negotiate for any possible deviation from his/her pre-existing beliefs.

In elimination-by-aspect (EBA) processing (Svenson, 1979; Tversky, 1969, 1972), the decision maker initially compares all the alternatives in regards to the most important attribute that comprises the decision set. Any alternative that does not meet the decision maker’s level of acceptance for the attribute in question is immediately eliminated from consideration. Those alternatives remaining are then judged on the next important attribute. Elimination-by-aspect processing continues until only
one alternative remains. It is important to note, because elimination-by-aspect does not involve an in-depth comparison between alternatives, any dissonance generated from it is considered to be nil (Payne et al., 1993). Elimination-by-aspect strategy, as described here, is 'easy to apply, explain, and defend to oneself as well as to others ...' (Tversky, 1972, p. 298). However, its uncritical application can lead to sub-optimal decisions. It is expected individuals who place high value on effort reduction or tend to avoid making decisions could resort to elimination-by-aspect choices.

In regards to defining search characteristics, both conjunctive and elimination-by-aspect processing are selective as to the amount of information assessed over decisional trials. Conjunctive processing is conducted in an alternative-wise manner whereas elimination-by-aspect processing is conducted in an attribute-wise manner. Both strategies are considered to be low demanding as to the cognitive effort necessary for their implementation (Einhorn & Hogarth, 1981; Gati & Tibotski, 1989; Zakay, 1990).

Cognitive Strategies and Identity-Processing Style Similarities

From the theories reviewed, it is evident that parallels can be drawn between the cognitive strategies of decision making and Berzonsky's (1988, 1989, 1990) identity-processing styles. For example, as comparative processes, additive linear or additive
difference processing suggests the presence of structure with an 'open' or 'unconditional' form of flexibility; conjunctive processing suggests structure with a 'closed' or 'conditional' form of flexibility and; elimination-by-aspect suggests structure with an open/closed or unconditional/conditional form of flexibility. Following this reasoning, it could be further suggested a decision maker who has 'constructed' his/her identity through search could have a social-cognitive disposition to use an additive difference or additive linear procedure; the decision maker who has 'conferred' his/her identity through others could have a social-cognitive disposition to use a conjunctive procedure and; the decision maker who is 'uncommitted' in identity could have a social-cognitive disposition to use an elimination-by-aspect procedure (Berzonsky et al., 1992, 1993; Marcia et al., 1993). Implicit in this reasoning is the idea that the cognitive strategies are also expressions of the decision maker's underlying 'world view' (Kelly, 1955). In other words, this author is suggesting that Berzonsky's identity-processing styles are inherently connected to those cognitive strategies that constitute decision making theory (Gati, 1993; Payne et al., 1993; Pitz & Harren, 1980), the same cognitive strategies that throughout the decision making literature have mainly been viewed within a task contingent framework (Ford et al., 1989; Payne, 1976).

In countering these suggestions, decision theorists (Huber, 1983; McKenna, 1984) could argue that Berzonsky's identity-pro-
cessing styles are nothing more than a different way of describing the cognitive strategies. Where this argument does have some validity (Hunt et al., 1989; Robertson, 1985), it is important to note, to suggest this viewpoint is to support the task contingent reasoning this author thinks is responsible for the decision maker not receiving greater consideration within the decision making model. As a result, if the identity-processing styles are actually cognitive strategies, then it is logical to expect they should respond to task complexity in the same fashion as do the cognitive strategies (Payne, 1976, Payne et al., 1993). On the other hand, if it is found that in addition to the expected task effects that the identity-processing styles demonstrate processing differences that are consistent to Berzonsky's theory, then it would be apparent the author is dealing with another concept, a concept that is 'distinct from but apart of' decision making theory.

Cost Benefit Analysis and the 'Need for Cognition'

Finally, what is important to note about cost/benefit analysis is that it gives the decision maker a 'psychological reason' or 'desire' (with or without awareness) to process information in a particular manner (Ford et al., 1989). For this author, this 'desire' is perceived as being semantically similar to 'need' ... regardless of whether this 'need' is to reduce cognitive strain - a task contingent phenomena or, is
one's expressed willingness to engage in a heightened cognitive activity - a person-centred phenomena. As such, this author is suggesting that cost/benefit analysis and the 'need for cognition' are positively correlated - where a decision maker's cognitive response to a complex task is also related in part to his/her 'need for cognition'. In other words, as a task contingent premise, cost/benefit analysis is subject to personological influences.

TECHNIQUES FOR STUDYING DECISION MAKING AS A PROCESS

The method of choice for conducting research in decision making is structural modelling (Billings & Marcus, 1983; Einhorn & Hogarth, 1981; Pitz & Sachs, 1984) and process tracing (Ford et al., 1989; Payne, 1976, 1993). In structural modelling emphasis is placed on the outcome of the decisional process rather than on the intervening processing steps that comprise the decisional event. Through active manipulation of the 'input-output' factors that constitute the decisional problem, structural models are used to draw inferences about the decision processes (Pitz & Harren, 1980; Svenson, 1979). In contrast, the emphasis in process tracing is on the intervening steps the decision maker used during decision making. In process tracing, cognitive processing is 'inferred' from the behavioral units and search sequences that comprise the task (Einhorn, 1979; Payne et al., 1993). Because this author is interested in an adolescent's predecisional behav-
as it occurs during the selection of a career, a process tracing technique is used for its methodology.

Process Tracing Techniques

Three main process tracing techniques are found in the literature: verbal protocol analysis (Ericsson & Simon, 1980; Newell & Simon, 1972); eye movement monitoring (Russo, 1978) and; information board analysis (Einhorn & Hogarth, 1981; Johnson et al., 1989; Payne, 1976).

Verbal protocol analysis requires the decision maker to 'think aloud' as he/she simultaneously performs the decisional task. The decision maker’s verbal descriptions of the procedure are taken as indicators of his/her cognitive operations (Ericsson & Simon, 1980; Newell & Simon, 1972). Problems common to verbal protocol analysis are: a) it is difficult to analyze the data objectively (Russo et al., 1985); b) it has the potential to influence the decision maker’s eventual choice (Svenson, 1979); c) it can be more indicative of memory than cognitive processing (Johnson et al., 1989) and; d) it is labour-intensive thereby limiting the number of subjects it can document at any given time. A derivative of verbal protocol analysis is the retrospective written protocol.

Eye movement monitoring pertains to a decision maker’s eye fixations that are recorded with cameras as he/she scans a visual display (Russo et al., 1985). Meaning that a person’s eye fixations are considered to be the indicators of underlying cogn-
nitive operations. Criticisms concerning eye movement monitoring are: a) it is good at indicating what information the decision maker has ignored, but is poor in determining what information was processed; b) it has difficulty distinguishing between 'response reactivity' and processing differences and c) it requires sophisticated equipment that is cost prohibitive.

In a similar fashion, information board analysis records the decision maker’s processing responses on a computerized matrix (Johnson et al., 1989; Payne, 1976). Every movement of the decision maker’s search process is documented through computer-initiated responses. Again researchers who use the information board should be sensitive to the fact that 'response reactivity' is an inevitable part of a subject’s final processing measure. However, as a sophisticated device, the computerized information board is highly capable of precise and useful measurement. The information board is easy to use and can be administered to more than one subject at a time. Since verbal protocol has been criticized as being obtrusive in interrupting subject’s thought process, this author will utilize the information board and retrospective written protocol in this study instead.

CONCLUDING REMARKS & GENERAL QUESTIONS

Where decision making theory suggests cognitive processing is mainly a function of task complexity (Ford et al., 1989; Gati, 1993; Payne 1976, Payne et al., 1993; Pitz & Harren, 1980), this
author is suggesting it is also a function of the decision maker's personality, in particular; his/her identity-processing style (Berzonsky, 1988, 1990, Berzonsky et al., 1992, 1993). In other words, the selection of a cognitive strategy is not only task contingent per se, but is also an expression of a decision maker's personal world view - a world view that is developmental and social-cognitive in scope. Implicit in this statement is the idea that within each of Berzonsky's identity-processing styles there is a distinct psycho-social structure and flexibility - a structure and flexibility that is seen in process to be similar to those cognitive strategies that comprise decision making theory. As such, the following questions can now be proposed: To what extent is Berzonsky's identity-processing styles related to decision making theory? When exposed to the same decisional task, do Informational adolescents demonstrate a greater propensity to engage in compensatory processing than Normative or Diffuse/avoidant adolescents? Specifically, are Informational adolescents inclined to use additive linear or additive difference procedures; Normative adolescents inclined to use a conjunctive procedure and; Diffuse/avoidant adolescents inclined to use an elimination-by-aspect procedure? To what extent are these processing inclinations true for a decision task that is seen to vary in informational complexity? Finally, in reflecting distinct world views, do Informational, Normative and Diffuse/avoidant adolescents show a qualitative preference for certain
types of information when making an occupational decision?

Development of Hypotheses

Based on the preceding questions, two hypotheses can be formalized as follows:

Hypothesis I:

(A) It is hypothesized that adolescents who vary in identity-processing style will differ in search behaviour for a decisional task that varies in informational complexity.

(B) It is hypothesized that Informational adolescents are more compensatory in the processing of occupational material than Normative and Diffuse/avoidant adolescents. Specifically, Informational adolescents are inclined to use an additive linear or additive difference procedure; Normative adolescents are inclined to use a conjunctive procedure and; Diffuse/avoidant adolescents are inclined to use an elimination-by-aspect procedure.

Hypothesis II:

It is hypothesized that Informational adolescents will reflect a preference for occupational information that is intrinsically centred whereas Normative and Diffuse/avoidant adolescents will reflect a preference for occupational information that is extrinsically centred.
CHAPTER THREE

METHODOLOGY

The following study was designed to investigate the relationship between an adolescent's identity-processing style and those pre-decisional processes he/she used when making an occupational choice. The study was conducted in two stages. The first stage was used to determine through test batteries (ISI-3 and EOMEIS-2) the adolescent's identity-processing style. Only those adolescents who met a pre-defined cutoff point went on to the second stage, a computerized information processing exercise (Johnson et al., 1988). Finally, it is to be noted an author-generated Work Value Survey was administered to a separate sample of adolescents so as to provide material that was for constructing the information processing exercise.

STAGE ONE

SAMPLE

409 volunteer undergraduate art students were recruited from the classroom at University of British Columbia. 77 students were excluded because of missing responses on question items or were found to exceed the study's age limit (18-24). 6 The mean age for

6On the basis of identity status literature this age range theoretically represents the 'critical period' where identity formation is felt to be occurring (Erikson, 1963, Waterman, 1982, Marcia et al., 1993). As such, for reasons stated above, these students should provide the necessary social-cognitive variability for investigating the information processing characteristics of Berzonsky's (1988, 1993) identity-processing styles.
the remaining 332 students was 19.78 (SD=1.62) years. Most were freshmen and sophomores (65.9%) with 2.21 (SD=1.62) years of college education. The sample pool consisted of 116 males (34.9%) and 216 females (65.1%). To encourage future participation in the study's information processing exercise, the students were told if they completed all phases of the study they would be eligible for a monetary prize to be awarded later.

Finally, in a similar fashion, an additional 103 volunteer undergraduate students were recruited so as to provide data that was necessary for constructing the study's information processing exercise. The criteria for selecting these students was the same as that found above.

INSTRUMENTATION

The first stage research was conducted by way of a paper and pencil test battery: Berzonsky's (1992) Identity Style Inventory (ISI3-Revised Version), Adams, Bennion and Huh's (1989) Extended Objective Measure of Ego Identity Status (EOMEIS-2) and an author-generated Work Value Survey (WVS).

1. Measurement of Identity Determination

A) The identity style inventory (ISI3-revised version)

Berzonsky's (1992) Identity Style Inventory (ISI3) is a

7In noting the sample's educational status, it seems reasonable to assume that these students should be search sensitive in regards to career possibilities (Erikson, 1963, 1968, 1982).
paper-and-pencil instrument designed to measure the Informat­
tional, Normative and Diffuse/avoidant identity styles. It con­
sists of a 11-item Informational-style scale, a 9-item Normative-
style scale; a 10-item Diffuse/avoidant scale and a 10-item Com­
mitment scale. Since the central concern of this study was to
examine the relationship between the identity styles and their
search process, the Commitment scale was not addressed. In
regards to scoring, Berzonsky suggests identity style classi­
fications could be made 'by performing a z-score transformation
of the subjects' raw scores on the three style measures, using
the individual's highest z-score on the three scales as the basis
for determining his or her identity style' (p. 292), and the
principle identity style score is to be at least half a standard
deviation (0.5) greater than the other two scores.

Berzonsky (1992b) reports that the test-retest reliabilities
for the ISI3 over a two-month period (N=75) were: Informational
(0.75), Normative (0.74), and Diffuse/avoidant (0.71). Internal
reliabilities (alpha coefficients) were: Diffuse/avoidant (0.73),
Informational (0.62) and Normative (0.66). Correlation coeffi­
cient with Adams-Grotevant Identity Status Scores (1984) ranged
from 0.31 to 0.65 (Berzonsky, 1989).

Alpha coefficients calculated for this sample (N=332) ranged
from 0.59 for Normative to 0.72 for Diffuse/avoidants. These were
comparable to Berzonsky's results (1992b) and appeared adequate
for this research purpose.
B) The extended objective measure of ego identity status (EOMEIS-2)

The Extended Objective Measure of Ego Identity Status (EOMEIS-2) (Adams et al., 1989) was included to examine the psycho-social maturity of the subjects and to validate the identity styles Berzonsky's (1992) ISI3 generated.8

The EOMEIS-2 is a standardized paper-and-pencil instrument designed to measure the ego status of Identity Diffusion, Foreclosure, Moratorium and Identity Achievement. The short form EOMEIS-2 consists of 32 items reflecting the presence or absence of crisis and commitment in the ideological domain, that is; the individual's belief structure in the areas of occupation, religion, politics, and philosophical life style. There are two items for each ego status in the four ideological areas. Scale scores for each identity status are derived by summing responses to the appropriate items (1 = Strongly Disagree, 6 = Strongly Agree). Subjects are then classified into each identity status by using scoring rules specified in the scoring manual of the EOMEIS-2.

Briefly, it is suggested that the sample mean plus one standard deviation as the cut-off point for each identity sub-scale. Subjects scoring above the cut-off point on a particular scale, while simultaneously scoring below the cut-off points on

---

8 Since Berzonsky's (1992; 1993) identity styles are theoretically grounded on Marcia et al.'s (1980; 1993) identity statuses, the concurrent use of the EOMEIS-2 was to provide additional validating support, in particular; for what this study means by 'pure' identity style types.
the other remaining scales would be categorized as being in that particular identity scale. Those who scored more than one cut-off points in the identity scales were considered to be transitional types.

The EOMEIS-2 measure is widely used in identity status research and is reported to have impressive psychometric properties (Grotevant & Adams, 1984; Jones & Streitmatter, 1987). Studies from Jones and Hartmann (1985), Bennion and Adams (1986) indicated an acceptable range of alpha coefficients from 0.75 (Diffusion) to 0.85 (Foreclosure), and from 0.62 (Diffusion) to 0.75 (Foreclosure) on the ideological subscales. Estimates of convergent-divergent validity ranged from 0.52 to 0.80 (Bennion & Adams, 1986), and showed an excellent stability with correlation coefficients ranging from 0.82 to 0.90 across a 2-week test interval in Blustein et al.'s (1989) study.

Data from this sample supported the findings of other research. Alpha coefficients calculated for this sample ranged from 0.62 (Diffuse/avoidant) to 0.80 (Foreclosure). These estimates were comparable with those appearing in the literature, an indication of the appropriateness of the EOMEIS-2 for examining the identity statuses.

2. Measurement of Work Value

A. Work Value Survey (WVS)

The purpose of the Work Value Survey (WVS) was two-fold: first, to provide the informational categories (attributes) that
would be used in the construction of the study’s processing exercise; and second, to avoid any irrelevant ‘value’ categories that might decrease the validity of the study results.\footnote{Since the WVS was constructed especially for this study, it is necessary to briefly discuss theoretically how it was operationalized. Berzonsky’s (1992) world view orientation should be apparent in this theorizing.}

**Theoretical premise of the work value survey**

While remaining sensitive to Berzonsky’s underlying rationale, the WVS took Ronen’s (1978) position that a person’s value system is an ‘integral part’ of the personality and a ‘partial product’ of the social and cultural environment. In being a conscious and central component of the personality, values per se are seen to greatly influence one’s evaluation of a particular occupation (Gottfredson, 1981; Super, 1962). As such, in constructing the WVS, only those values that have been defined through previous testings and had occupational relevance were selected (Butler, 1983; Elizur, 1984; Judge et al., 1992; Rosenberg, 1956; Super, 1962, 1975). As a result of such selection, twelve work-related values comprised this survey. (See Appendix A for the selected value items).

**Extrinsic and intrinsic definitions for the work values**

Following Sarnoff’s (1966) premise that values can be divided into the categories of ‘Aggrandizement’ (wealth, prestige, power) and ‘Realization’ (humanitarian, equalitarian, aesthetic, intellectual), the WVS classified its twelve values in accordance to whether they reflected an extrinsic, inter-personal or intrin-
sic, intra-personal emphasis (Dyer & Parker, 1975). Values reflecting an extrinsic, inter-personal emphasis were defined as those that are 'externally mediated by someone other than the employee himself' (Deci, 1972); or theoretically, as those reflecting Maslow's (1970) lower need states such as pay, promotion and security etc. In other words, for those people who held a pre-dominant extrinsic, inter-personal position, the act of work could be seen as being a 'means to an end' proposition, that is; it is instrumental in function. On the other hand, values indicating an intrinsic, intra-personal orientation were defined as those that are 'mediated by the person himself' (Deci, 1972); or theoretically, as those reflecting Maslow's (1970) higher order needs such as self-fulfilment or self-actualization. For these people, work is valued for its ability to provide the opportunity to express one's abilities and potentials.

Finally, as for administering the WVS, a subject's response was recorded on a 7-point Likert type scale that ranged from Very Unimportant (1) to Very Important (7). The four highest intrinsic and extrinsic scores were selected for the study's information processing exercise.

**PROCEDURE**

While distributing the test batteries to the class, the students were told that the study concerned how young people go
about making occupational decisions. Each student received a research packet containing a demographic form (age, sex, year of university education etc), the ISI3 (Berzonsky, 1992) and EOMEIS-2 (Adams et al, 1989) identity questionnaires. The presentation order of the questionnaires within the packets always began with the ISI3 followed by the EOMEIS-2 etc. While all subjects were told there was an information processing part to the study, the fact was, only those students who met the pre-defined cut off point on the identity questionnaires (see above) were eligible for further testing. After receiving their packet, the students were told to take it home and follow the written instructions in their spare time. Once completed, they were to return the questionnaires to the same class the following week for pick up. The briefing ended by assuring the students their confidentiality would always be a top experimental priority. Finally, distribution of the Work Value Assessment Survey to different classes followed the same procedure as above with the exception that it was completed in class and collected immediately thereafter.

PRELIMINARY RESULTS

1. Subject Identity Determination

A. Berzonsky's identity style inventory (ISI3-revised version)

Using Berzonsky's (1992) classification procedure outlined above, 184 (55.4%) of the respondents (N=332) met the
of these, 60 were Informationals, 58 were Normatives and 66 Diffuse/avoidants. The rest were mixed types.

B. Adams, Bennion and Huh's extended objective measure of ego identity status (EOMEIS-2)

Through computer calculation, the classification procedure reduced the initial sample of 332 to 180, that is; 54.2% met the criteria for classification into one of the four identity statuses: 40 subjects were Identity Achievement, 26 were Moratorium, 53 were Foreclosure and 61 were Identity Diffuse. The remaining subjects constituted the transitional types.

Correlation between the two identity measures scores

Pearson correlation coefficient measure showed a low to moderate range of agreement (from 0.37 for Informational to 0.47 for Normative) between Berzonsky's ISI3 and Adams et al.'s EOMEIS-2 scores. Three of the four-subscale scores in Adams et al.'s test correlated significantly (p< .05) and positively with the expected scale scores in Berzonsky’s ISI3 test (i.e. Informational with Identity Achievement, Normative with Foreclosed, Diffuse/avoidant with Identity Diffused). However, the Moratorium scale score in EOMEIS-2 did not correlate significantly with ISI3’s Informational scale score.

Final Sample Determination

Subjects who expressed a dominant identity type from both Berzonsky’s ISI3 and Adams et al.’s EOMEIS-2 were selected for
the information processing experiment. Those who were identified in one test but not the other were excluded from further testing. Identity achieved and Moratorium subjects from the EOMEIS-2 were compared with the Informationals, the Foreclosed with the Normatives; and the Diffused with the Diffuse/avoidants of the ISI3 test. This comparison resulted in 89 subjects (40 Informationals, 26 Normatives and 23 Diffuse/avoidants) who were qualified as 'pure' identity representative samples for the information processing exercise.

For statistical expediency, 21 subjects (13 females and 8 males) for each identity style group (Informational, Normative and Diffuse/avoidant) were selected.

2. Work Value Categories

The result from the Work Value Survey (N=103) is summarized in Table 1 below.

| TABLE 1 |  
| Mean & Standard Deviation (SD) of Values by the College Sample (N=103) |  
| Intrinsic values |  
| Feeling of self fulfilment | 6.45 | 0.88 |  
| Chance to use skills | 5.97 | 1.14 |  
| Intellectual stimulation | 5.82 | 1.23 |  
| Autonomy | 5.49 | 1.26 |  
| Opportunity for advancement | 5.48 | 1.69 |  
| Responsibility | 5.46 | 1.23 |  

55
Extrinsic values

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wage/salary</td>
<td>5.63</td>
<td>1.14</td>
</tr>
<tr>
<td>Affiliation (Being with people)</td>
<td>5.50</td>
<td>1.29</td>
</tr>
<tr>
<td>Competent supervisor at work place</td>
<td>5.48</td>
<td>1.42</td>
</tr>
<tr>
<td>Prestige/Status</td>
<td>5.47</td>
<td>1.39</td>
</tr>
<tr>
<td>Authority</td>
<td>5.28</td>
<td>1.29</td>
</tr>
<tr>
<td>Variety of job duties</td>
<td>4.66</td>
<td>1.61</td>
</tr>
</tbody>
</table>

The highest rating of the first four value dimensions in the intrinsic and extrinsic sections were retained as attributes for the information board. Since 'Competent supervisor at work place' was felt to lean more towards job-related components than to inner or personal feelings, it was excluded from being considered for the information board. The eight values that were selected as attributes for the information processing exercise were: Feeling of self fulfilment, Chance to use skills, Intellectual stimulation, Autonomy, Wage, Affiliation, Prestige and Authority.

THE SECOND STAGE

SAMPLE

21 subjects (13 females and 8 males) who met the criteria from both identity measures were selected for each identity style group (Informational, Normative and Diffuse/avoidant) to participate in the following stage.

EXPERIMENTAL APPARATUS

The computerized information acquisition system MOUSELAB (Johnson et al., 1989) was used to present a choice situation
where subjects were required to assess self-relevant information and then select an alternative from a given group. The choice situation was presented graphically in the form of a matrix of boxes. The rows of the matrix listed the choice alternatives whereas the columns of the matrix listed the self-relevant information. (see Fig. 1, p. 59)

STIMULI AND DESIGN

Stimuli consisted of a 'low' and 'high' task complexity choice problem. The 'low' complexity choice problem contained three occupational alternatives and eight attributes whereas the 'high' complexity choice problem contained six occupational alternatives and eight value attributes. Each choice problem had its own display of matrix. (See Appendix B for the display)

Since Bettman and Park (1980) reported positive relationships between a person's prior knowledge of an occupational alternative and his/her depth of search, it is therefore essent-

10Literature indicates this amount of information is considered to be low to moderate in its potential to exert cognitive strain (Gati, 1993). While theorists are mixed on whether more cognitive strain is engendered when the number of the alternatives versus attributes are altered (Payne et al., 1993), this researcher feels greater variation in cognitive performance should be expected with the former. It is logical to think more processing effort is required to 'close' on an alternative that is comprised of many different or possibly conflicting utilities than it is to 'close' on a single themed attribute that only differs in regards to its own cue ratings. In other words, by its very nature, an alternative appears to be a more complex gestalt than is the attribute. While in an empirical sense, this idea would have to be subjected to test, it is felt the reasoning put forth is sufficient enough to justify varying only the alternatives; thus, the number of attributes across both experimental conditions will remain constant. Finally, the number of attributes was set at eight to roughly parallel the previous work of Payne (1976), Dahlstrand et al. (1984) and many others.
ial to control for potential bias of prior occupational preference. Thus, the occupational alternatives comprised this study's two matrix displays were given the 'neutral' titles (i.e. Job #1, Job #2, Job #3 ... etc.). In contrast, the eight attributes used to describe the occupational alternatives were those procured from the Work Value Survey (WVS). Each attribute was represented in its appropriate metric (e.g. wage in dollars $ per year) and three ordinal levels (e.g. high, moderate and low). The cue values (i.e. high, moderate and low) for the attributes were randomly assigned. However, attempts were made to ensure an equal number of the cue values occurred for each alternative; that is, no alternative was superior or inferior to any other alternative. The order of the attributes on the matrix display were also randomly assigned. All subjects were required to complete both choice exercises and the order of presenting the decision task was counterbalanced across subjects within each group.

Each experimental condition started with two practice sessions and an experimental trial. The practice sessions (i.e. 'renting an apartment' and 'buying a car' choice set) were given prior to the experimental trial to familiarize subjects with the task procedures. Once subjects felt comfortable with the task and experimental apparatus, they could proceed to the experimental task at their own pace.

At the beginning of the experimental trial, all the information cells that comprised the information board matrix were
blank, that is, only the alternative and attribute headings on each axis were visible. The information underlying a matrix cell was revealed when the subject moved the cursor with the mouse to the cell of interest. This information would remain on the screen until the subject moved the cursor out of the matrix cell and onto the other cell. Over the course of the experimental trial, a subject could revisit a previously opened cell, and thus revealing its information again. (See Fig. 1 below). The computer monitored each mouse movement: the order of the cells opened, the amount of time spent in each cell, the total choice time and the chosen option. (See Appendix C for illustration). No time limits were imposed on the subjects due to the desire to realistically simulate the condition of career decision making. Finally, after each search session, subjects were asked to respond to a series of questions that included the reasons why they made the occupational choice they did, as well as describing the procedure they took to make that choice. (See Appendix G for samples of written protocols).

Fig. 1  Example of Stimulus Display of the 3 x 8 Task Matrix

<table>
<thead>
<tr>
<th>Chance to Use Skills</th>
<th>Feeling of Self-Fulfillment</th>
<th>Wage</th>
<th>Authority</th>
<th>Affiliation</th>
<th>Prestige</th>
<th>Intellectual Stimulation</th>
<th>Autonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job #1</td>
<td></td>
<td>$40K$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job #2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job #3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Choose One:  

Job #1  
Job #2  
Job #3
PROCEDURE

Upon arriving at the lab, subjects were given a computer disk that contained the MOUSELAB program and a pre-assigned condition. Again they were told that the purpose of the experiment was to learn how young people make decisions. With MOUSELAB program on their computer screens, subjects read the written instructions and then completed the two practice choice sets.

After the practice sessions, subjects were told via their computer screens that in the experiment to follow, they could look at any information they wished; in any amount or order, and were to stop only when they felt they had sufficient information to make their final choice. They were told there was no time constraint and no right or wrong answer to the exercise. When it was clear to the researcher that the subjects understood the task, then the actual experiment started.

One to three subjects were tested at a time. Each subject completed two separate individual sessions of approximately ten minutes in duration, scheduled at least a week apart. Procedures for both sessions were equivalent and subjects received feedback after the second session. The experimental sessions were held in the computer laboratories on the university campus.

MEASURES OF DECISION PROCESS

The basic system employed to analyze information acquisition
behaviour was that developed by Payne (1976). Four quantitative dependent measures were collected from the computerized decision tasks. These measures were used to summarize the subject's search behaviour and to categorize the search sequence into recognizable decision strategies.

1. **Information Search Behaviour**

   The four most widely used measures of search behaviour in decision literature are: Proportion of Information Search (PIS); Latency of Search (LS); Variability of Search of Alternative (VSA) and Direction of Search (DS). (See Appendix D for the computation of search measures).

   **A. Proportion of information search (PIS)**

   Proportion of information search (PIS) indicates the degree of information searched by each subject. A high number of PIS signifies an in-depth search with the likelihood of compensatory strategy usage whereas a low number PIS suggests a less in-depth search with the probability of a non-compensatory strategy usage. The PIS is operationalized by counting the number of boxes examined and divided by the total number of boxes on the board matrix. For instance, if 36 of 48 boxes are opened on the matrix, then the proportion of search is:

   \[
   \frac{36}{48} = 0.75
   \]

   **B. Latency of search (LS)**

   The latency of search (LS) refers to the amount of time the
subject spent on the task to make a choice. This is the aggregate
time of each box opened. Literature indicates latency of search
is usually employed as a surrogate measure of cognitive effort
(Jarvenpaa, 1989) or as attention individuals devote to an attribu­
ture (Hawkins, 1994). A high value of LS implies greater cogni­
tive effort or attention to an attribute whereas a low value of
LS denotes less cognitive effort or less attention to an
attribute in search.

C. Variability of search of alternative (VSA)

The variability of search of alternative (VSA) helps to
identify the type of cognitive strategy being employed. Payne
(1976) notes that the difference between a compensatory and non-
compensatory strategy is found in the amount of search each
alternative receives. Decision makers who use compensatory
strategies will search exactly the same information on each
alternative (i.e. constant search), so that the variability of
search will be zero. However, if greater variability of search is
found on each alternative, then a non-compensatory strategy may
be occurring. VSA is operationalized as the percent of informat­
ion searched per alternative and then computing the standard
deviation of these percentages for the alternatives (3 or 6) on
the matrix board. VSA is directly measured as

\[
\left\{ \left[ \sum x_i^2 - \left( \frac{\sum x_i}{n} \right)^2 \right] / n \right\}^{1/2}
\]

where \( n \) = number of total alternatives and
\( x_i \) = proportion of alternative searched.
D. Direction of search (DS)

The direction of search (DS) indicates the extent of alternative-based or attribute-based processing that a subject demonstrates during the search sequence. This DS measure is useful in its ability to distinguish different search strategy. The presentation of an overall tendency of a subject’s search pattern combined with the above VSA measure renders powerful indicators of which specific strategy was being used.

Operationally, the DS index was calculated by the number of alternative-based moves minus the number of attributed-based moves and then divided by the sum of these two numbers (Payne, 1976). A score of -1.0 represents a strictly attribute-based search pattern, whereas a score of +1.0 an alternative-based search pattern.

\[
\text{DS Index} = \frac{\text{ALTERN} - \text{ATTRIB}}{\text{ALTERN} + \text{ATTRIB}}
\]

2. Decision Strategies

In this study, the subjects’ processing was classified according to their usage of the rules as suggested by Payne (1976), Olshavsky (1979), Svenson (1979), Billings and Marcus.

The classification of information search patterns to one of the decision rules indicates which strategy could have dominated throughout the decision process. However, this does not imply that one search strategy was used consistently throughout. In fact, multistage strategy can be observed during the search process (Appendix F). Since multi-stage strategy was not the focal point of the present study, this author will therefore concentrate on the dominant strategy that was prevalent in the subject’s search.
The four prototypical cognitive strategies in decision literature are: Additive Linear (AL), Additive Difference (AD), Conjunctive (CONJ), and Elimination-By-Aspects (EBA).

These decision rules are defined by the combination of the positive or negative value of DS (+) plus a constant (0) or varied value (>0) of VSA. For instance, a positive DS (i.e. alternative-based processing) and a constant search of information across alternative (i.e. VSA=0) is compatible with the additive linear rule. A negative DS (i.e. attribute-based processing) and a constant amount of search across alternative (i.e. VSA=0) signifies an additive difference rule. A positive DS (+) with a variable VSA (>0) implies a conjunctive rule. Finally, if DS is negative (-) and VSA is not zero (>0), use of elimination-by-aspect is implied. (See Appendix E for a pictorial description of the strategies).

The four decision rules are further categorized according to their varying levels of complexity, from the simple non-compensatory strategies (i.e. CON and EBA) to more systematic and analytical compensatory strategies (i.e. AL and AD). These two levels of decision strategies are used as measures for testing the first hypothesis I(B) of the study.

RESEARCH HYPOTHESES

Two hypotheses were formally tested for:
Hypothesis I:

(A) It is hypothesized that adolescents who vary in identity-processing style will differ in search behaviour for a decisional task that varies in informational complexity.

(B) It is hypothesized, Informational adolescents are more compensatory in the processing of occupational material than Normative and Diffuse/avoidant adolescents. Specifically, Informational adolescents are inclined to use an additive linear or additive difference procedure; Normative adolescents are inclined to use a conjunctive procedure and; Diffuse/avoidant adolescents are inclined to use an elimination-by-aspect procedure.

Hypothesis II:

It is hypothesized that Informational adolescents will reflect a preference for occupational information that is intrinsically centred whereas Normative and Diffuse/avoidant adolescents will reflect a preference for occupational information that is extrinsically centred.

DATA ANALYSIS

The design for testing the first hypothesis (IA) of identity styles and search behaviour was a oneway multivariate analysis of variance (MANOVA) model with three levels of the independent

65
variable (Informational, Normative and Diffuse/avoidant) and four dependent variables (PIS, LS, VSA and DS). The reason for using MANOVA is due to the potential correlations of the dependent variables. MANOVA repeated-measure was also used to examine the effect of task repetition and its interaction with the three identity style groups. All statistical analyses were set at the significant level of \( p = .05 \).

To test the first hypothesis (IB) in terms of the frequency of strategy usage across the three groups, a Pearson Chi-square was used. The rationale of using Pearson Chi-square is based on the fact that the dependent variables are of nominal nature. Three levels of independent variable (Informational, Normative and Diffuse/avoidant) and two dependent variables (compensatory, non-compensatory) were used.

To examine whether identity styles differ in their search of value attributes, a stepwise discriminant analysis was performed. The employment of discriminant analysis is based on its versatility in determining which set of continuous variables best captures or characterizes group differences (Betz, 1987; Tabachnick et al., 1989). In order to achieve this objective, the latency of search (LS) measure was summed according to the attention individuals put on each eight value attributes and was renamed as latency of search per attribute (LSPA). (See Appendix C, Fig. 2 for an example of LSPA). LSPA scores were then used as independent variables to predict the group membership's selectiv-
ity of the value attribute search. Wilks’ lambda was used as the selection criterion for entering the LSPA scores into the analysis. Group mean scores on the resulting functions were compared and patterns of value attributes were analyzed.
CHAPTER FOUR

RESULTS

The objective of this section is to examine the different search behavior among the three groups of decision makers, the type of strategies used, and the degree of selectivity in their content search of 'value' dimension.

HYPOTHESIS I:

(A) It is hypothesized that adolescents who vary in identity-processing style will differ in search behavior for a decisional task that varies in informational complexity.

(B) It is hypothesized, Informational adolescents are more compensatory in the processing of occupational material than Normative and Diffuse/avoidant adolescents. Specifically, Informational adolescents are inclined to use an additive linear or additive difference procedure; Normative adolescents are inclined to use a conjunctive procedure and; Diffuse/avoidant adolescents are inclined to use an elimination-by-aspect procedure.

HYPOTHESIS I (A)

Adolescents of different identity-processing style differ in their search behaviour across tasks.

To determine whether Informational, Normative and Diffuse/avoidant adolescents differ in their search behaviour for a choice task that varied in cognitive complexity, a oneway multivariate analysis of variance (MANOVA) was performed. The results are presented in Table 2. The overall F-ratio was significant at the 0.05 level (Wilks' lambda = 0.57, p<.05). Because the overall MANOVA was significant, the univariate analysis of each search dependent measure was examined to determine the nature of its
contribution to the effect of the adolescents' identity-processing styles. Moreover, the presentation of such results will provide a fuller understanding of the phenomenon under study. Finally, a post-hoc Scheffe multivariate test was used to determine the specific locus of the group difference.

**TABLE 2**

**MANOVA Summary of Task Among the Three Groups**

\[ (S=2, M=2 \ 1/2, N=25 \ 1/2) \]

| Name | Value | F   | df  | p>|f |
|------|-------|-----|-----|----|
| Wilks| 0.63  | 1.74| 16.00| 0.05*|

**Univariate Summary of Decision Measures among the Three Groups with (2, 60) df**

<table>
<thead>
<tr>
<th>Univariate Analysis</th>
<th>LOW TASK</th>
<th>HIGH TASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIS</td>
<td>2.15</td>
<td>6.04*</td>
</tr>
<tr>
<td>LS</td>
<td>2.53</td>
<td>4.37*</td>
</tr>
<tr>
<td>VAS</td>
<td>2.67</td>
<td>2.10</td>
</tr>
<tr>
<td>DS</td>
<td>3.09*</td>
<td>4.96*</td>
</tr>
</tbody>
</table>

Note * is significant at p< .05 level

**The Four Search Measures**

**A. Proportion of Information Search (PIS)**

Arcsine transformation was used for the proportion of information search data.\(^{12}\) Proportion of information search (PIS) was relatively high overall, averaging 90.5% (M=1.25, SD=0.34) of

---

\(^{12}\)In order to meet the formal requirement for the analyses of variance, raw proportions are subjected to an arcsine transformation (Kirk, 1982, p.82; Howell, 1987, p.304).
available information on the smaller board (3 alternatives x 8 attributes) and 79.3% (M=1.03, SD=0.39) on the larger board (6 alternatives x 8 attributes) for the identity-processing style groups. This coincides with other studies (Billings & Marcus, 1983; Davidson, 1991; Klayman, 1985; Payne, 1976; Sundstrom, 1987) where the decision maker's basic response to task complexity is to use a smaller amount of available information.

When examining the identity-processing style groups in detail with univariate F-tests, the author found no significant difference amongst them for the low information condition (F(2,60) = 2.15, p > .05) but a significant difference in the high information condition (F(2, 60) = 6.04, p < .05) (See Table 2). Scheffe multiple comparison tests showed only the Informational and Normative group differed significantly in the amount of information searched when in the high task condition.

Although no difference was found in the low task condition, this author did observe that the largest amount of information search was carried out by the Informationals, as presented in Table 3. In fact, Informationals explored the largest amount of information in both low and high information task conditions (94%, M=1.37, SD=0.28 and 90%, M=1.25, SD=0.34), whereas Normatives and Diffuse/avoidants showed a greater decrease of information search from the low to high conditions (88% to 74% for the Normatives, and 87% to 78% for the Diffuse/avoidants). The steady performance of the Informationals on the amount of
information search (94% to 90%) in both tasks indicated that the change of information load did not have a strong effect on this group for no drastic decrease in search performance was observed. Moreover, the high number of information search signifies that Informationals may have a greater readiness to use compensatory rules when compared to the other groups. The decrease of information search from low to high task conditions for Normatives and Diffuse/avoidants demonstrated a shift to non-compensatory strategy when information load became too complex. This was confirmed in the result of the following hypothesis (IB).

**TABLE 3**

<table>
<thead>
<tr>
<th></th>
<th>Low Task</th>
<th></th>
<th>High Task</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Informational</td>
<td>1.37</td>
<td>0.28</td>
<td>1.25</td>
<td>0.34</td>
</tr>
<tr>
<td>Normative</td>
<td>1.21</td>
<td>0.36</td>
<td>0.87</td>
<td>0.38</td>
</tr>
<tr>
<td>Diffuse/avoidant</td>
<td>1.18</td>
<td>0.34</td>
<td>0.99</td>
<td>0.36</td>
</tr>
</tbody>
</table>

Note: Low task: F(2, 60) = 2.15, p > .05, ns
High task: F(2, 60) = 6.04, p < 0.05, signif.

*B. Latency of search (LS)*

The amount of time being consumed by the three groups had an average of 101.18 and 166.89 seconds for the low and high tasks. Univariate F-test results indicated that there is no significant difference among the groups in the low task condition (F(2, 60) = 2.53, p > .05) but significant difference in condition
of high information load ($F(2, 60) = 4.37, p< .05$) (See Table 4). When examining each group individually, results showed that Informationals spent consistently more time prior to choice ($M=114.52, M=206.22$) than did the Normatives ($M=105.77, M=155.87$) or the Diffuse/avoidants ($M=83.26, M=138.57$). Diffuse/avoidants spent the least amount of time and with the smallest variation among the groups across conditions. Scheffe multiple comparison test showed a significant difference between Informationals and Diffuse/avoidants, but not with Normatives in the high information condition. This indicates that Informationals may exert more cognitive effort when confronted with a complex situation whereas Diffuse/avoidants will try to get an easy and quick solution to the problem.

To further the claim that Informationals may have exerted more cognitive effort across tasks, the author examined the average amount of time individual pondered on each box (See Table 4 A). As was congruous with the proportion of information search (PIS) section, Informationals did not seem fazed by the change in the information load, they; in fact, showed an increase of time spent in each box (1.43, 1.47 seconds). Normatives and Diffuse/avoidants exhibited a decrease of time spent per box as task became more complicated. Still, this decrease of time consumption was not as drastic for the Normatives (from 1.33 seconds to 1.31 seconds) as that of the Diffuse/avoidants (from 1.36 seconds to 1.21 seconds).
TABLE 4
Latency of Search for a Choice Decision among the Three Groups
Amount of Time Consumed (in Seconds unit)

<table>
<thead>
<tr>
<th></th>
<th>Low Task</th>
<th></th>
<th>High Task</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Informational</td>
<td>114.52</td>
<td>37.62</td>
<td>206.22</td>
<td>88.57</td>
</tr>
<tr>
<td>Normative</td>
<td>105.77</td>
<td>56.49</td>
<td>155.87</td>
<td>82.90</td>
</tr>
<tr>
<td>Diffuse/Avoidant</td>
<td>83.26</td>
<td>43.38</td>
<td>138.57</td>
<td>55.56</td>
</tr>
</tbody>
</table>

Note  Low task : F(2, 60)=2.53, p>.05, ns.
      High task: F(2, 60)=4.37, p<.05, signif.

TABLE 4 (A)
Mean & SD of Average Time Spent (in seconds) Per Box among the Groups

<table>
<thead>
<tr>
<th></th>
<th>Low Task</th>
<th>Mean</th>
<th>SD</th>
<th>High Task</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Informational</td>
<td></td>
<td>1.43</td>
<td>0.44</td>
<td>1.47</td>
<td>0.42</td>
<td></td>
</tr>
<tr>
<td>Normative</td>
<td></td>
<td>1.33</td>
<td>0.33</td>
<td>1.31</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>Diffuse/Avoidant</td>
<td></td>
<td>1.36</td>
<td>0.49</td>
<td>1.21</td>
<td>0.39</td>
<td></td>
</tr>
</tbody>
</table>

C. Variability of search by alternative (VSA)

The VSA measure in this study showed a rise in variability as task complexity increased. The average VSA across the three groups were 0.10 (SD=0.11) for the 3 x 8 board and 0.17 (SD=0.13) for the 6 x 8 board. This suggested that more non-compensatory strategies were being used in the high condition. However, univariate F-test results revealed no significant difference among the groups in both low (F(2, 60) = 2.67, p> .05) and high (F (2, 60) = 2.10, p> .05) information tasks (See Table
5). Yet, when examining each group specifically, we found Informationals possess the lowest variable scores of information search (0.05, 0.12) under both conditions among the groups. This signifies that Informationals may employ more compensatory strategies in solving problems, though this use of high-processing strategies may be somewhat reduced as the task load increased. Normatives displayed more variability (0.12, 0.20) as the tasks progressed, implying that Normatives may have altered their strategy and searched less across attributes within an alternative as they proceeded from one task to another. This finding is in accordance with those in the PIS section. The Diffuse/avoidants exhibited large variability scores across tasks, signalling a conceivable high employment of non-compensatory strategies. These were substantiated in hypothesis (1B).

**TABLE 5**

**Mean & SD of Variability of Search (VSA) for each Identity Group**

<table>
<thead>
<tr>
<th>Identity Group</th>
<th>Low Task</th>
<th>Mean</th>
<th>SD</th>
<th>High Task</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational</td>
<td></td>
<td>0.05</td>
<td>0.08</td>
<td></td>
<td>0.12</td>
<td>0.14</td>
</tr>
<tr>
<td>Normative</td>
<td></td>
<td>0.12</td>
<td>0.13</td>
<td></td>
<td>0.20</td>
<td>0.13</td>
</tr>
<tr>
<td>Diffuse/avoidant</td>
<td></td>
<td>0.13</td>
<td>0.11</td>
<td></td>
<td>0.17</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Note: Low task: F(2, 60)=2.67, p>.05, ns
      High task: F(2, 60)=2.10, p>.05, ns

D. Direction of search (DS)

The direction of search was dominated by alternative-based search, that is, subjects searched information within alternatives, but across attributes (M=0.36, M=0.34). Informa-
ionals and Normatives had a mean search pattern index which clearly indicated an alternative-based search pattern in both low and high task conditions; while Diffuse/avoidants also showed an alternative-based pattern, but their mean search index was considerably smaller (0.08 and 0.05) and closer to an attribute-based pattern than the other two groups. Univariate F-test results indicated that significant differences among groups in both low \( F(2, 60) = 3.09, p = .05 \) and high \( F(2, 60) = 4.96, p < .05 \) tasks (See Table 6). Scheffe test indicated that there is a significant difference between Informationals and Diffuse/avoidants in their search pattern in high condition. Informationals were more inclined to use the alternative mode of search whereas Diffuse/avoidants leaned more towards an attribute style of search. This was congruent with the other search characteristics mentioned so far. The constant use of alternative-wise search for the Informationals across conditions suggests that the quantity of information may not determine the Informationals’ search behaviour but the underlying personality factor does.

**TABLE 6**

<table>
<thead>
<tr>
<th>Identity-Processing Style</th>
<th>Low Task</th>
<th>High Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational</td>
<td>0.49</td>
<td>0.65</td>
</tr>
<tr>
<td>Normative</td>
<td>0.52</td>
<td>0.31</td>
</tr>
<tr>
<td>Diffuse/avoidant</td>
<td>0.08</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Note: Low task: \( F(2, 60) = 3.09, p = .05 \), signif.  
High task: \( F(2, 60) = 4.96, p < .05 \), signif.
SUMMARY OF HYPOTHESIS I (A)

To summarize the above findings, Informationals performed significantly different from the Normatives and Diffuse/avoidants in terms of the depth, direction and latency of search. In regards to the depth of information search on the low and high task conditions, Informationals accessed 94% to 90% of information, Normatives accessed 88% to 74% and Diffuse/avoidants accessed 87% to 78%. Informationals’ search pattern was largely alternative based (M=0.49, M=0.65), indicating that search might be more compensatory in nature. Also, Informationals spent more time in search (114.52 and 206.22 seconds) relative to the other groups. Though no differences were found among the groups in search variability, test results did indicate that less variation was found across conditions (M=0.05, M=0.12) for the Informationals, another manifestation of a higher degree of compensatory strategy usage.

Normatives revealed a change of search behaviour as the task became more complicated. They reduced the amount of information search (from 1.21 to 0.87), and thus; increased the variability in their search pattern (from 0.12 to 0.20). However, such a reduction of information search did not come with a corresponding decline of time spent in each box (1.33 to 1.31 seconds), in fact; compared to the amount of information searched, Normatives might have maintained or expanded their cognitive effort as the task become more demanding. Finally, in terms of search direct-
ions, Normatives' style of search was primarily alternative-based.

Diffuse/avoidants displayed the least amount of information search or time spent throughout, hence; a large variability in their search pattern was observed. Also, this group's search pattern is basically attribute inclined, signalling a higher frequency of noncompensatory strategies usage in handling tasks.

In order to explicate which particular strategy was being utilized by the groups, a more detailed measure was used.

Hypothesis I (B):

It is hypothesized, Informational adolescents are more compensatory in the processing of occupational material than Normative and Diffuse/avoidant adolescents. Specifically, Informational adolescents are inclined to use an additive linear or additive difference procedure; Normative adolescents are inclined to use a conjunctive procedure and; Diffuse/avoidant adolescents are inclined to use an elimination-by-aspect procedure.

In order to examine possible between-group differences in strategy selection, a Pearson chi-square was used for each task. The basic assumption of independence, normality and inclusion of non-occurrences of chi-square were all met (Howell, 1987), thus; it reveals no threats of using such a procedure. Test results indicated there were no significant association among the groups of strategy preference in the low task $X^2(2, N = 57) = 3.22$, $p > .05$, but a significant association between-group differences in strategy selection under high information load $X^2(2, N = 62) = 8.33$, $p < .05$. These findings were congruent with those found in the hypothesis I(A) above.
A comparison of compensatory strategies among the groups demonstrated a greater proportion of compensatory strategy was used by the Informationals (N=10) than the Normatives (N=2) or Diffuse/avoidants (N=4) in the high task (See Table 7). When the comparison was made at the individual strategy level, Informationals showed a roughly even split on both tasks in their use of compensatory and non-compensatory strategies (11 versus 8 and 10 versus 11) whereas Normatives and Diffuse/avoidants demonstrated an increase in non-compensatory processing (from 11 to 18 and from 12 to 17) across tasks. Normatives yielded mostly conjunctive strategies in both task situations (8 and 14), and the Diffuse/avoidants presented the largest number of elimination-by-aspect strategy usage (4 and 9) among the groups.

Under low information load, there was an approximately equal number of compensatory and non-compensatory strategy usage for the whole sample (26 versus 31), but in the high information condition, the use of compensatory strategy usage fell to 25.8% (16 versus 46). The frequency of decision strategies used under each group is presented in Table 7 below.
### TABLE 7

**Frequencies of Decision Strategies Employed by the Three Identity-processing Groups in Low and High Information Tasks**

<table>
<thead>
<tr>
<th></th>
<th>Low Task</th>
<th>High Task</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>1 2 3</td>
</tr>
<tr>
<td><strong>Compensatory</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AL</td>
<td>9 6 4</td>
<td>10 1 3</td>
</tr>
<tr>
<td>AD</td>
<td>2 0 4</td>
<td>0 1 1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11 6 8</td>
<td>10 2 4</td>
</tr>
<tr>
<td><strong>Non-compensatory</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONJ</td>
<td>6 8 8</td>
<td>9 14 8</td>
</tr>
<tr>
<td>EBA</td>
<td>2 3 4</td>
<td>2 4 9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8 11 12</td>
<td>11 18 17</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>19 17 20</td>
<td>21 20 21</td>
</tr>
</tbody>
</table>

Note: 1=Informational  
2=Normative  
3=Diffuse/avoidant

* Column final TOTAL did not add up to N=21 because some subjects’ search sequence was unidentifiable.

**SUMMARY OF HYPOTHESIS I (B)**

To conclude, the above data supported the hypothesis that Informationals used more compensatory rules (additive linear) than Normative and Diffuse/avoidants when dealing with highly complex tasks. Findings showed that the decision behaviour among groups was rather consistent throughout the situations. Informationals are likely to examine more information, spend more time, and generate more rules when integrating information than Normatives and Diffuse/avoidants. Thus, the largest number of additive linear...
linear strategy usage was observed. Normatives displayed a shift from additive linear to conjunctive processing from low to high task conditions, and held the largest number of conjunctive strategy usage of all the identity-processing style groups. Diffuse/avoidants demonstrated the highest frequency of elimination-by-aspect strategy usage across tasks. Lastly, results indicated that the most preferred strategy was the conjunctive strategy (44.9%), and the least preferred strategy was the additive difference strategy (6.8%) among the three identity groups.

Although no formal hypothesis was posited regarding the effect of tasks on within-subjects search behaviour, decision making literature has repeatedly stated that search behaviour is mainly task contingent (Payne, 1976; Payne et al., 1993). To investigate the effect of tasks on adolescent's way of processing, a MANOVA repeated-measure was used. The three personality types were used as the main effect between-subjects measures and the two tasks as dependent within-subjects measures. Tests for homogeneity of variance and sphericity (for effects involving repetitions) were conducted and in some cases these assumptions appeared to be violated. Since tests of homogeneity of variance are very sensitive to departures from normality in the distribution of the dependent variables (Tabachnick et al., 1989), and the author is uncertain to the extent of such violations, a conservative probability level (p= .01) was adopted to compensate for this uncertainty. Greenhouse-Geisser epsilon (p=
.38) indicated no serious violation of compound symmetry.

### TABLE 8

**MANOVA SUMMARY TABLE OF WITHIN-SUBJECT ACROSS TASKS**

<table>
<thead>
<tr>
<th></th>
<th>Wilks</th>
<th>F</th>
<th>DF</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between-Subject</td>
<td>0.69</td>
<td>2.94</td>
<td>8.00</td>
<td>0.01 *</td>
</tr>
<tr>
<td>Within-Subject</td>
<td>0.10</td>
<td>125.72</td>
<td>4.00</td>
<td>0.00 *</td>
</tr>
<tr>
<td>A x B</td>
<td>0.70</td>
<td>2.76</td>
<td>8.00</td>
<td>0.01 *</td>
</tr>
</tbody>
</table>

Note * significant at p<.05 level

A significant between-group difference was found in the MANOVA results, this suggested that the three identity styles group did differ in the way they process information. However, the within-group result indicated that Informational, Normative and Diffuse/avoidant adolescents also modified their manner of processing when the task became more complicated. Because of the significant interaction effect between the two variables, one could not claim either variables (task or style differences) as the sole cause of influencing how the adolescents processed information, it is possible both factors have contributed to adolescents' manner of processing.

**HYPOTHESIS II:**

It is hypothesized that Informational adolescents will reflect a preference for occupational information that is intrinsically centred whereas Normative and Diffuse/avoidant adolescents will reflect a preference for occupational information that is extrinsically centred.

In order to examine how the three identity-processing styles differed in their search concerning the work value attributes, a
stepwise discriminant function analysis was performed. The eight 'value' attributes (Autonomy, Prestige, Feeling of Self-fulfilment, Wage, Authority, Intellectual Stimulation, Affiliation and Chance to use Special Skills) in both low and high tasks were used as predictors of membership for each of the three identity-processing style types.

The selection rule for the stepwise discriminant analysis on this sample was to minimize Wilks' lambda. Ten predictors met the Wilks' lambda criterion of entry were selected. The ten predictors, by their order of entry into the discriminant analysis are shown in the Table 9 below.

**TABLE 9**

<table>
<thead>
<tr>
<th>Selected Independent Variables Entered into the Discriminant Function for Final Analysis</th>
<th>Wilks Lambda</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feeling of self fulfilment (b)</td>
<td>0.72</td>
</tr>
<tr>
<td>2. Wage (b)</td>
<td>0.54</td>
</tr>
<tr>
<td>3. Intellectual stimulation (a)</td>
<td>0.47</td>
</tr>
<tr>
<td>4. Wage (a)</td>
<td>0.42</td>
</tr>
<tr>
<td>5. Autonomy (b)</td>
<td>0.38</td>
</tr>
<tr>
<td>6. Authority (a)</td>
<td>0.35</td>
</tr>
<tr>
<td>7. Chance to use skills (a)</td>
<td>0.34</td>
</tr>
<tr>
<td>8. Feeling of self fulfilment (a)</td>
<td>0.32</td>
</tr>
<tr>
<td>9. Prestige (b)</td>
<td>0.30</td>
</tr>
<tr>
<td>10. Affiliation (a)</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Note: Key (a) = low task  
(b) = high task

p< .01 for all the above variables

Of the two possible discriminant functions, both were statistically significant. The two functions accounted for 73.7% and 26.3% of the between-group variability in discriminating among
the three identity-processing style types (See Table 10). The first function was significant at less than the $p = .00$ level, and the second function, after removing function one, was significant at the $p = .01$ level. A varimax rotation was performed to simplify interpretation of the significant functions.

The rotated loading matrix of correlation between the ten predictor variables on both tasks and the two discriminant functions showed that the primary predictors (i.e. $r > | .30 |$) for the first discriminant function are the 'Feeling of Self-fulfilment', 'Intellectual Stimulation' and 'Autonomy'. Since the result of the group centroids (See Table 10) indicated that the first and largest function separates the Informational (large positive centroid = 1.50) from the Normative group (large negative centroid = -1.01); the higher scores of these predictors (i.e. 'Feeling of Self-fulfilment', 'Intellectual Stimulation' and 'Autonomy') were characteristics of the Informational group versus the Normative group (See Table 11). Wage, as shown in Table 11, was not a major consideration for the Informationals in job selection. The Diffuse/avoidants scores also correlated negatively with the first function, with their group centroid falling between the Informational and Normative groups.

On the second discriminant function, the primary predictors included 'Wage', 'Authority', 'Feeling of Self Fulfilment' and 'Prestige'. This function differentiated Normative from Diffuse/avoidants individuals. The high scores of these predictors (i.e.
Wage, Authority etc) reflected the main characteristics of the Normative group, and the low scores in 'Autonomy' and 'Chance to use skills' indicated these factors were trivial to this Normative group.

TABLE 10

<table>
<thead>
<tr>
<th>Discrimination function</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group centroid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>1.50</td>
<td>-0.15</td>
</tr>
<tr>
<td>Normative</td>
<td>-1.01</td>
<td>0.98</td>
</tr>
<tr>
<td>Diffuse/avoidant</td>
<td>-0.49</td>
<td>0.83</td>
</tr>
</tbody>
</table>

TABLE 11

Rotated Loadings Between Discriminating Variables and Canonical Discriminant Functions

<table>
<thead>
<tr>
<th>Variables</th>
<th>Function 1</th>
<th>Function 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling of self fulfilment</td>
<td>(b)</td>
<td>0.59*</td>
</tr>
<tr>
<td>Autonomy</td>
<td>(b)</td>
<td>0.39*</td>
</tr>
<tr>
<td>Intellectual stimulation</td>
<td>(a)</td>
<td>0.35*</td>
</tr>
<tr>
<td>Chance to use special skills</td>
<td>(a)</td>
<td>0.23</td>
</tr>
<tr>
<td>Wage</td>
<td>(a)</td>
<td>0.04</td>
</tr>
<tr>
<td>Authority</td>
<td>(a)</td>
<td>0.15</td>
</tr>
<tr>
<td>Feeling of self fulfilment</td>
<td>(a)</td>
<td>0.30</td>
</tr>
<tr>
<td>Prestige</td>
<td>(b)</td>
<td>0.17</td>
</tr>
<tr>
<td>Wage</td>
<td>(b)</td>
<td>0.00</td>
</tr>
<tr>
<td>Affiliation</td>
<td>(a)</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Note: Variables ordered by size of correlation within function with highest correlation for each variables in boldface.

\[ R^2 = 0.76 \ (X^2 = 73.69, \ df = 20, \ p < 0.00) \]
\[ R^* = 0.57 \ (X^2 = 26.31, \ df = 9, \ p < 0.01) \]

Key: (a) = Low Task
     (b) = High Task
SUMMARY OF HYPOTHESIS II

To conclude, results of the above investigation support the hypothesis that certain types of occupational information may have a potent effect among the three identity-processing groups in their decision process.

For the Informationals, 'Feeling of Self Fulfilment', 'Autonomy' and 'Intellectual Stimulation' are important factors when deciding upon a job. These factors are components of the intrinsic world view orientation. For the Normatives, 'Wage', 'Authority', 'Prestige' are the criteria of selection in their job choice process. These criteria happen to lean towards the extrinsic value orientation. For the Diffuse/avoidants, their criteria for job selection are not as well-defined as those of the Informationals or the Normatives, they do, however, display an extrinsic tendency in job search. Anyhow, due to this group's ambiguous stand in their value preference, any conclusion drawn for the Diffuse/avoidants should be viewed with caution.
CHAPTER FIVE

DISCUSSION

Analysis of the results lends support for the hypotheses that adolescents who vary in identity-processing style do differ in their search behaviour and strategies usage when making an occupational decision. It was found prior to choice that Informational type adolescents assessed more information, in a constant fashion, for a longer period of time whereas; Normative and Diffuse/avoidant type adolescents assessed less information, in a variable fashion, for a shorter period of time. In regards to search direction, Informationals and Normatives appeared to be alternative-based whereas Diffuse/avoidant appeared to be attribute-based. As a result, in a definitional sense (see chapter two), Informationals were more additive linear; Normatives were more conjunctive and; Diffuse/avoidants were more elimination-by-aspect in their processing. As compensatory inclined processors, Informationals seemed to exhibit a flexibility across the decisional set for using and generating processing rules; that is, they seemed to express a cognitive willingness to make what they felt was an informed decision. On the other hand, as non-compensatory inclined processors, Normatives seemed less flexible in using and generating processing rules, and exerted themselves only when the task demand is minimal. Diffuse/avoidants seemed less willing or interested in exerting them-
selves cognitively in making a decision. For these people, the method of choice was an effort reducing 'quick solution' approach (Gilliland et al., 1993; Russo & Dosher, 1983; Todd & Benbasat, 1992). Finally, it is important to note, these results concerning the identity-processing styles cognitive strategy usage were true only for the high task complexity condition in this thesis. Processing differences for the identity styles were statistically indistinguishable from each other in the low task complexity condition.

In regards to adolescents of different identity-processing styles having a qualitative preference for certain types of data (Blaylock & Rees, 1984), it was found that adolescents of Informational orientation placed a greater emphasis on intrinsic types of attributes (i.e., Feeling of Self-fulfilment, Intellectual Stimulation, Autonomy etc.) whereas for the most part, Normative type adolescents placed a greater emphasis on extrinsic types of attributes (i.e., Wage, Authority, Prestige and Feeling of Self-fulfilment etc). As was theoretically expected, Diffuse/avoidant type adolescents seemed (in almost random fashion) to oscillate between the two value orientations.

For the most part, the results in this thesis do support Berzonsky's identity-processing styles, and in doing so, provide decision making theory with a personological perspective. As Berzonsky's theory suggests, when it comes to processing self-relevant information, Informational adolescents were found to be
internally centred (intra-personal), open, unconditional and 'objective' whereas; Normative adolescents were found to be externally centred (inter-personal), closed, conditional or 'biased' (Petty & Cacioppo, 1986). While appearing inconclusive in regards to their locus of control (intra- or inter-personal), Diffuse/avoidant adolescents appeared 'objective' and/or 'biased' over the course of their processing. Finally, taking the extent of one's processing as an indicator of Cacioppo & Petty's (1982, 1993) 'need for cognition', Informational adolescents appear to be higher in this need than Normative or Diffuse/avoidant adolescents.

Relationship to Previous Studies

It is important to note that the results of this thesis are compatible with other findings concerning individual differences and decision making. For instance, in a marketing study of consumer products, Verplanken et al. (1992), Verplanken (1994), Leone and Dalton (1988) found high 'need for cognition' individuals tended to elaborate more extensively on the information, generate more task-related cognitive responses and were more persistent in their search effort than low 'need for cognition' subjects. Furthermore, in a study concerning the 1984 U.S. presidential election (Ahlering & Parker, 1989), subjects with high 'need for cognition' tended to be less susceptible to a primacy effect in impression formation and more differentiated in beliefs
than individuals with low 'need for cognition' tendency. Finally, research also shown that subjects possessing an internal locus of control (Lefcourt, 1972), a low degree of dogmatism (Lambert and Durand, 1977) and a reflective personality style (Kagan cited in Weinman et al, 1985) were more deliberate in their search activity than those subjects who had an external locus, a high degree of dogmatism and an impulsive personality style. All these findings were analogous to Berzonsky's identity-processing styles as determined in this thesis.

It was suggested in the opening chapter that whether one is talking about personality type or cognitive processing that both are adaptive processes. For personality theory, the extent of this adaptation has a macro scope as in one's world view (Kelly, 1955) whereas for decision making theory it is micro in scope as in being task contingent or situationally centred (McKenna, 1984; Messick et al., 1976; Wright, 1985).

In recent development of decision theory, Payne et al. (1993) suggest that task contingent processing as it presently appears in the literature is essentially a fixed, top-down processing procedure. Meaning that when the decision maker is faced with a decision task that varies in complexity, he/she will intuitively select from a repertoire of possible responses an appropriate cognitive strategy. Payne et al. (1993) further suggest this selection procedure could also be explained through a constructive, bottom-up procedure. In this case, the decision
maker does not simply select a standard cognitive procedure, but varies his/her processing approach by constructing the strategy from elements stored in memory in a unique and creative manner. Payne et al (1993) refer to this decisional uniqueness as being an example of the 'adaptive processor', a processor who appears to be less confined to task and more personological in emphasis.

In this context, an interesting observation was noted when analyzing the subjects' search profiles. First, it was found in the high task complexity condition that most subjects used in varying degrees - a 'two stage' procedure. (See Appendix F and H). They began the task by using a non-compensatory procedure so as to establish a smaller set of alternatives, and then shifted to a more thorough compensatory procedure to evaluate these alternatives. While these observations are consistent with decision making theory (Bettmen et al., 1991; Gertzen, 1992; Olshavsky, 1979; Payne, 1976), it was noted that a large number of Informational adolescents seemed to embrace a 'multi-pass' technique. Essentially, they accessed and analyzed the whole data-base, followed by a two-stage process, then concluded with a search for additional information long after it seemed (based on the number of passes over the same information) a choice had already been mentally formulated. This 'multi-pass' procedure is puzzling since by its very nature runs counter to the rationale of cost/benefit analysis (Beach & Mitchell, 1979). Whether the Informational adolescent is adapting to a dissonance resulting
from comparative analysis (Frey, 1981), or is exhibiting a cognitive capacity for a multi-pass procedure is not empirically clear. What is clear is that Normative and Diffuse/avoidant adolescents do not engage in this procedure to the same extent as Informational adolescents. In other words, this author is suggesting that Berzonsky's (1990, 1993) Informationals could be representative of Payne et al.'s (1993) 'adaptive processor'.

Theoretical Implications

Based on the results of the thesis certain personological possibilities suggest themselves for viewing decision making theory.

1. In regards to the alternative-based search schema; how do we view the attribute inclined search pattern of the Diffuse/avoidant adolescent?

In the rationale section, it was suggested as world views (Kelly, 1955), Berzonsky’s identity-processing styles represent alternative-based search schema, schema that mirrors in a Gestalten fashion the identity-processing styles’ underlying psychological structure (Berzonsky & Neimeyer, 1988). While results showed that Informational and Normative type adolescents were alternative-based (additive linear and conjunctive) in their search, this was not the case for the Diffuse/avoidant type adolescent who appeared more attribute-based (elimination-by-aspect) in his/her search. In other words, Diffuse/avoidant adolescents were seen to express a search pattern that was cue (situation-
ally) based, a search pattern that when viewed across the study's conditions of complexity appears essentially task contingent in emphasis. Thus, at least on the surface, it seems the Gestalten premise of this thesis is somewhat weak until the above fact is subjected to further comment. Noting that Berzonsky (1992) theoretically portrays the Diffuse/avoidant adolescents as having a less mature or organized psychological stance, it seems logical to expect these people would naturally gravitate to closing with an attribute (task-contingent) search approach. However, it is not so much that the Diffuse/avoidant adolescents are attribute inclined, as it is their world view has a narrower scope.

2. To what extent does task complexity show that Berzonsky's identity-processing styles are distinct entities that are separate from, but a part of compensatory and non-compensatory procedures?

Implicit in this question is the suggestion that Berzonsky's identity-processing styles are nothing more than different descriptors of the cognitive strategies, meaning that if true, it is logical to expect that they should respond to the issue of task complexity in the same manner as the cognitive strategies do in decision making theory. In other words, relative to high and low task complexity, Informationals, Normatives and Diffuse/avoidants should be indistinguishable from each other in using compensatory and non-compensatory procedures. Study results indicate this is true only for the low task complexity condition. In the high task complexity condition, the adolescents are distinguishable from
each other. However, because the direction of the results is inconsistent across the task conditions, any conclusion supporting the conceptual distinctiveness of the identity-processing styles from the cognitive strategies has be to qualified. For example, it is possible the identity-processing styles will only manifest themselves when a certain amount of cognitive strain is present, a criterion that may not be present in the low task complexity condition. In fact, literature notes that the effects of personality on behaviour are likely to be greatest when situational pressures are moderate and less restrictive (Monson, Hesley & Chernick, 1982). The six-alternative by eight-attribute condition in this study is at best regarded as being intermediate in cognitive strain (Gati, 1993; Russo & Rosen, 1975). In future research, so as to verify the identity-processing styles in regards to the cognitive strategies, it is suggested the above intermediate condition could serve as a low task complexity condition.

3. Intrinsic and Extrinsic data preferences, how do we explain for the fact that they were somewhat ambiguous?

Somewhat at variant to the theoretical premise that the identity-processing styles have preference for certain types of data when deciding upon jobs, it was noted in the results that Normative adolescents were also interested in 'Feeling of self fulfilment' (intrinsic) dimension to the same extent as they were interested in Prestige (extrinsic) dimension. In fact, this
slight blurring of intrinsic and extrinsic preferences was also seen to occur for the Diffuse/avoidant adolescents. However, it is to be noted, since the sample of this study is comprised of university students, it is possible that intrinsic data such as 'Feeling of self-fulfilment' would have a strong appeal. To clarify this issue, research with non-university adolescents should be conducted.

4. To what extent is the decision context - apart from task complexity or content - important to Berzonsky's identity-processing styles?

MacAllister et al. (1979) suggest other extraneous factors besides task complexity or cue content could impact on a person's decision making process - that is, the 'irreversibility' of the task; the 'significance' of the task and; the 'accountability' of the task. In other words, when the decision maker perceives a decision in this manner, processing tends to be compensatory in direction. While in a strict cognitive sense, there is no reason to expect that this observation would not hold for Berzonsky's identity-processing styles, the fact is, the results found in this thesis do suggest other possibilities. For example, it is possible the 'irreversible' or 'accountable' decision could have an entirely different meaning and thereby processing approach (i.e., compensatory or non-compensatory) for the adolescent who is either Informational, Normative or Diffuse/avoidant. Having greater potential for dissonance, the Informational adolescent could be more at ease cognitively with the 'irreversible' or
'accountable' decision than the Normative or Diffuse/avoidant adolescent. In other words, how an adolescent goes about making a decision could depend in part on how its 'defining characteristics' fit psycho-socially into his/her identity-processing style. In situations where the educational counsellor detects a need to frame the choice set so as to facilitate search behaviour, he/she should take into account the adolescent's identity-processing style. While theoretically speculative, it is possible the Diffuse/avoidant adolescent could be encouraged to search more if the choice set is proposed with a 'reversible' characteristic or applies some other dissonance reducing intervention.

While focusing on Berzonsky's identity-processing styles, this thesis has shown that decision making is understandable beyond the task contingent argument. Personality factors and informational content are also important determinants in cognitive strategy selection. Some of the theoretical observations in this study will now be applied to its adolescent sample.

**Practical Implications**

From an applied educational perspective, what has been gained from showing that adolescents who vary in identity processing style differ in how they explore and process information? It should be apparent to the reader that an important assumption of this thesis is that Berzonsky's identity-processing styles
could act as useful indicators for educational counsellors who work with adolescents that are predecisional in their occupational exploration. Noting that the goal of counselling is to support and facilitate a client’s exploratory behaviour, Berzonsky’s identity-processing styles provide additional insight for furthering this endeavour.

Considerations for Counselling

For the educational counsellor who has a Diffuse/avoidant adolescent as a client, by definition, the problem is one of indifferent and/or premature cessation of informational search. While on the surface, it is tempting to suggest intervention has only to focus on decisional framing (Tversky & Kahneman, 1981, 1990), informational content (Blaylock & Rees, 1984) and/or cognitive strategy awareness, the fact is, more lasting consequences could be achieved if the central issue of the Diffuse/avoidant’s personality (structure and flexibility) was also addressed. In taking this position, it is important to note, Diffuse/avoidants are not as receptive to relationships of authority (e.g. educational counsellors) as they are to the influences of the peer group (Berzonsky et al., 1992). As such, it is from within peer group that the Diffuse/avoidant should begin his/her occupational search, field trips, groups exercises, discussion groups and so forth. Once having gathered some information to work with, improving the Diffuse/avoidant’s awareness of the cognitive strategies could then be introduced. Throughout the counselling pro-
cess, the Diffuse/avoidant adolescent should be encouraged to alter and/or expand his/her occupational data base. In sum, counselling the Diffuse/avoidant adolescent is essentially action orientated through group exercises. Depending on the availability of counselling resources, preliminary ego identity work is also suggested (Marcia, 1980; Marcia et al., 1993).

For Normative adolescents, the problem is not indifferent search but premature cessation of search, a cessation that comes from embracing the 'conferred' goals or values of others. Cognizant of the fact that Normative adolescents are sensitive to exploratory exercises of a personal nature (Berzonsky et al., 1992, 1993), when counselling, care should be taken not to immediately challenge this group's underlying structure and flexibility. Essentially, in regards to personal development, the goal of counselling is to assist Normative adolescents to examine the authenticity of their "conferred" values and interests. Without such exploration, Normative adolescents could prematurely lock into occupations that need to be re-addressed in the future (Levinson, 1978). This is not to say anything about the Normative student who is unable to fulfil the 'conferred' expectations of the significant others (e.g. parent, society). In sum, counselling the Normative adolescent is essentially a one-on-one (counsellor to student) exercise, an exercise that strongly encourages a 'constructive' orientation.

Finally, for the Informational adolescent, the problem is
not indifferent or premature cessation of search, but is one of assuring the efficacy of the decisional process and eventual choice. Where counselling Diffuse/avoidants and Normatives may involve issues of ego identity (Erikson, 1963, 1968), this is not as much of a concern for the Informational adolescents. For these adolescents, more attention should be directed at refining their cognitive skills, as in effective cognitive strategy usage. For different reasons that suggested for Diffuse/avoidant adolescents, Informational adolescents could benefit greatly from the group counselling situation, a situation that is conducive to exploring and exchanging one's occupational interests and ideas with others.

To conclude, it is important to note that the above ideas are merely suggestions for counselling and nothing more. What is important is that they suggest educational counsellors could view psycho-social theory as a means for assisting adolescents in becoming more effective decision makers.

The Information board as a counselling device

To what extent could the computerized information board be a resource for educational counsellors in helping adolescents who are pre-decisional in their occupational search? Since the information board is a recording device, its data could provide the base for counsellor and student to identify effective decisional procedures; to detect informational inconsistencies that may influence eventual choice; to further clarify an adolescent's per-
sonal aspirations and; to identify occupational possibilities that were unintentionally overlooked. Finally, counsellors could see how the data in the information board fit other observations they may have of the adolescent. In sum, as an active device that demands the subject to think in its usage, with refinement; the computerized information board could be a very powerful counselling tool (Jacoby et al., 1987; Kivlighan et al., 1994).

Lastly, information board methodology can also be used for research in a wide range of decision-based, social psychological phenomena (Jacoby et al., 1987). Phenomena like attitude formation, cognitive dissonance, impression formation and so forth may benefit from applying this technique to unravel the underlying mechanisms people use in forming their decisions. As such, information board methodology, as this author believes; provides a promising avenue for strengthening many areas of inquiry in social psychology, and in turn; better our understanding of the phenomena at hand.

**Limitations and Future Research**

This thesis, like any empirical studies, is not without its limitations. Several caveats must be addressed when interpreting the results.

1. **Level of Methodological Analysis**

In this thesis, the classification of the cognitive strategies was obtained by combining two decision process indicators
(Direction of Search, DS and Variability of Search, VS) so as to give a 'global' evaluation of the choice process (Biggs et al., 1985; Jarvenpaa, 1989, Todd & Benbasat, 1991). While literature notes this 'global' method has proven valuable in capturing overall strategy usage, it might not be as effective when it comes to identifying the more intricate sub-strategies that a person may use within the specific stages of decision making. In fact, 'global' assessment of the strategies offers the danger of being reductionistic, for it assumed that the decision maker employs the same cognitive strategies in the acquisition of information as he/she does in the processing of information. A review of the search profiles in the study indicates this might not be the case. (See Appendix H). A majority of subjects demonstrated remarkable flexibility in their decision behaviour by shifting back and forth among strategies when acquiring and processing information across tasks. To subject this observation to test, a finer level of strategy assessment is needed, one that can provide a detailed synopsis of the strategies used as the choice process proceeds. Systemically breaking down the search profiles into smaller segments (see Appendices F and H) and analyze the type or number of strategies implemented could help in this endeavour.

2. Experimental Design Problems

   A. Task size

   One potential limitation in the experimental design of this
study concerns the unequal number of alternatives in comparison to the attributes (3 x 8 and 6 x 8). In some cases, this uneven balance across the task matrix can impact on the direction of search (DS) index; that is, the DS measure may potentially bias towards an alternative-wise or an attribute-wise search (Bettman & Jacoby, 1976; Bockenholt & Hyman, 1994; Todd & Benbasat, 1993). While this uneven task size had not posed a real threat to the data of the study, in some cases, this researcher did rely on a few written protocols (see Appendix G) to formulate additional ideas about a subject's search sequence.

B. Time factor

The experimental tasks in this thesis were carried out with no time constraints. Subjects were free to follow their inclinations and search as much as they wanted. However, research notes that time pressure can exert an effect on a person's decision making where: a) information processing is accelerated; b) information is filtrated or; c) changes in decision strategy usage occurs (Ben Zur and Breznitz, 1981; Payne et al., 1988; Wright, 1974,). Future research could explore whether Berzonsky's three identity-processing styles respond to time pressure in the same fashion. Or, is it possible the Informational adolescent is the more proficient decision maker even when under time constraints?

C. Task generalizability

It should be noted that this study attempts to model 'real world' decision making through a hypothetical occupational exer-
cise. In relying on an experimental exercise for data, two problems are apparent in regards to its generalizability: a) in everyday life, adolescents seldom find themselves in a situation where they can choose an occupation from several that are available simultaneously and b) everyday decisions tend to have a greater degree of 'accountability' or 'irreversibility' associated with them than what is found with those decisions that made up the experimental exercise. The extent that 'real world' adolescents utilize cognitive strategies in the same manner as those in this thesis can only be addressed through further research. Such research should take measures to better approximate 'real world' situations where everyday decision making is found, that is, whether this decision making concerns occupational choice or something else.

D. Content generalizability

Similar to the previous issue of task generalization, the work value preferences listed in this thesis are the product of a university sample. Since the college environment is relatively liberal in thought and expression (Munro & Adams, 1977), it is uncertain whether these values found can be generalized to the larger 'real world' population. In other words, the concreteness of the working world is more likely to foster up a 'right-wrong' perspective which might instill a different work value orientation. Whether these values will carry beyond the college environment is yet to be explored.
3. The Issue of Using a Non-probabilistic Sample

Because subjects were selected on the basis of their identity-processing styles, the study did not have the benefit of experimental randomization, that is, unforeseen extraneous factors could have had an impact on the study results.

For example, noting the identity-processing styles of the subjects was determined through two identity questionnaires (ISI3 & EOMEIS-2), it was found a significant number of the Normatives in this study were of Asian or Middle-east descent. As a result, at least for the Normatives, cultural differences could have important consequences for the findings in this study. Identity formation and occupational choice is felt to have a different meaning when it is viewed within a family (or society) that is culturally foreclosed (Marcia et al., 1993). For the Asian or Middle-east adolescent, occupational choice is not the same self-actualizing process as it is for the Western adolescent (Standley, 1971; Super et al., 1963). In other words, self-actualizing for the foreclosed family means fulfilling one's collective obligation (Rosenberg, 1979). As such, the individuality suggested by Berzonsky's Informational processing style could be viewed as an aberration or sign of immaturity to a family that is culturally foreclosed (Triandis, 1989). In this case, it is the Normative adolescent who is the adaptive processor (Payne et al., 1993). Additional research is needed to examine how cultural factors play a part in the relationship
Conclusion

Limitations withstanding, the results of this study do support the contention that decision making is not only task contingent but is also subject to personological influences, influences that in an adaptive sense reflect the decision maker's personal 'world view' (Kelly, 1955). How an adolescent makes a decision and what he/she considers to be important in that decision is very much connected to his/her identity-processing style (Berzonsky, 1990; 1993). It is apparent from this study that further work is needed concerning its level of methodological analysis, the generalizability of the findings under different time conditions, other topics of decision problems, and other samples of decision makers. As a result, it is felt researching the relationship between the decision maker's personological characteristics and cognitive strategy usage will not only increase our understanding of decision making past the task contingent argument (Payne, 1976; Payne et al., 1993), but will also suggest personological means for improving the decision process. Results in this thesis are encouraging enough to suggest further research on identity-processing style and decision making theory is warranted.
GLOSSARY OF TERMS

1. **Alternative** is the choice option of a problem set.

2. **Attribute** is the relevant characteristic of the choice alternative.

3. **Alternative-based search** is searched information within an alternative across attributes.

4. **Attribute-based search** is searched information direct across different alternatives along the same attribute.

5. **Compensatory rule** involves all the information about each alternative being combined together into one rating, such that a poor aspect on one attribute (e.g. long working hours) can be compensated for by a good aspect on another (e.g. high wage). Compensatory rule is based on an exhaustive, comprehensive search where greater cognitive effort is required.

6. **Constant search** means search of equal amount of information for every alternative and attribute.

7. **Cost/benefit analysis** is the procedure where strategy selection is to maximize decision quality with minimize effort.

8. **Non-compensatory rule** is based on only a subset of information, with each aspect often processed in a simpler way. No trade-offs between a weak and strong attribute in this rule. Non-compensatory rule is a simplify search where cognitive effort is reduced to minimum.

9. **Personological approach** consists of stable person-centred characteristics (traits, world views, cognitive styles) that influence or determine behavioral variation.

10. **Strategy** is a set of operations used to transform knowledge from an initial state to the final state, where the decision maker feels the problem is solved. **Strategy, rule and heuristic** are used interchangeably in this study.

11. **Task complexity** denotes by the changing number of alternatives and/or the number of attributes.

12. **Variable or selective search** means search of unequal amount of information for every alternative and attribute.

13. **World views** are structured schemata which assist individuals to interpret the event and chart their course of action.
REFERENCES


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APPENDIX A

PERSONAL WORK VALUE SURVEY

'Below is a list of value outcomes that you might ponder in deciding a job. Rate the values according to how important or desirable they are to you when contemplating a job.'

Circle the number you feel applicable to your situation.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Value Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Opportunity for advancement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2.</td>
<td>Wage/Salary</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3.</td>
<td>Prestige/Status</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>Variety in job duties</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5.</td>
<td>Responsibility</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6.</td>
<td>Authority</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7.</td>
<td>Autonomy/Independence</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>8.</td>
<td>Affiliation (being with people)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>9.</td>
<td>Intellectual stimulation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>10.</td>
<td>Chance to use special skills</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>11.</td>
<td>Competent supervisors in the workplace</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>12.</td>
<td>Feeling of self-fulfilment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

From the above value items, list the 3 most important values to you.

A. Item No. _____  B. Item No. _____  C. Item No. _____
APPENDIX B

MATRIX DISPLAY OF TWO DECISION TASKS

A 3 X 8 LOW TASK MATRIX

<table>
<thead>
<tr>
<th>Skills</th>
<th>Fulfil</th>
<th>Wage</th>
<th>Autho</th>
<th>Affil</th>
<th>Prest</th>
<th>Intell</th>
<th>Auton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job #1</td>
<td>Hi</td>
<td>Lo</td>
<td>40K</td>
<td>Mod</td>
<td>Lo</td>
<td>Mod</td>
<td>Hi</td>
</tr>
<tr>
<td>Job #2</td>
<td>Lo</td>
<td>Hi</td>
<td>38K</td>
<td>Hi</td>
<td>Mod</td>
<td>Lo</td>
<td>Mod</td>
</tr>
<tr>
<td>Job #3</td>
<td>Mod</td>
<td>Mod</td>
<td>35K</td>
<td>Lo</td>
<td>Hi</td>
<td>Hi</td>
<td>Lo</td>
</tr>
</tbody>
</table>

A 6 X 8 HIGH TASK MATRIX

<table>
<thead>
<tr>
<th>Auton</th>
<th>Prest</th>
<th>Fulfil</th>
<th>Wage</th>
<th>Autho</th>
<th>Intell</th>
<th>Affil</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job #1</td>
<td>Hi</td>
<td>Mod</td>
<td>Lo</td>
<td>34K</td>
<td>Hi</td>
<td>Hi</td>
<td>Lo</td>
</tr>
<tr>
<td>Job #2</td>
<td>Mod</td>
<td>Hi</td>
<td>Lo</td>
<td>32K</td>
<td>Mod</td>
<td>Mod</td>
<td>Hi</td>
</tr>
<tr>
<td>Job #3</td>
<td>Lo</td>
<td>Mod</td>
<td>Hi</td>
<td>40K</td>
<td>Hi</td>
<td>Lo</td>
<td>Mod</td>
</tr>
<tr>
<td>Job #4</td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>38K</td>
<td>Lo</td>
<td>Mod</td>
<td>Mod</td>
</tr>
<tr>
<td>Job #5</td>
<td>Lo</td>
<td>Lo</td>
<td>Mod</td>
<td>39K</td>
<td>Mod</td>
<td>Hi</td>
<td>Lo</td>
</tr>
<tr>
<td>Job #6</td>
<td>Mod</td>
<td>Hi</td>
<td>Mod</td>
<td>37K</td>
<td>Lo</td>
<td>Lo</td>
<td>Hi</td>
</tr>
</tbody>
</table>
APPENDIX C

A SAMPLE OF AN INDIVIDUAL'S SEARCH RECORD ON LOW TASK CONDITION

<table>
<thead>
<tr>
<th>Screen</th>
<th>Time</th>
<th>#</th>
<th>Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>102 1</td>
<td>1 100</td>
<td>32.850</td>
<td>0.0</td>
</tr>
<tr>
<td>102 2</td>
<td>2 100</td>
<td>6.709</td>
<td>0.0</td>
</tr>
<tr>
<td>102 4</td>
<td>4 100</td>
<td>2.580</td>
<td>0.0</td>
</tr>
<tr>
<td>102 6</td>
<td>6 100</td>
<td>12.469</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Subject #

<table>
<thead>
<tr>
<th>Screen</th>
<th>Time</th>
<th>#</th>
<th>Spent</th>
</tr>
</thead>
<tbody>
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Search Order

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<th>Spent</th>
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</table>

Fig. 2 Latency of search per attribute (LSPA) based on the above search record

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<tr>
<th>Skill</th>
<th>Fulfil</th>
<th>Wage</th>
<th>Autho</th>
<th>Affil</th>
<th>Prest</th>
<th>Intell</th>
<th>Auton</th>
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LSPA = 5.24 6.60 1.92 2.30 2.47 0.82 13.02 0.60

126
APPENDIX D

A SAMPLE OF THE COMPUTATION OF INFORMATION SEARCH MEASURES

<table>
<thead>
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<th>Attributes</th>
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<th>b</th>
<th>c</th>
<th>d</th>
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</thead>
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<tr>
<td></td>
<td>B</td>
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<td>8</td>
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<tr>
<td></td>
<td>C</td>
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<td>-</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Numbers in the body of the table indicate which pieces of information were searched and the order in which they were searched.

THE FOUR SEARCH MEASURES

1. **Proportion of Information Searched (PIS):**
   Measured as the number of cells examined divided by the total number of cells.
   
   e.g. Proportion searched = 9/16 = 0.56

2. **Latency of Search (LS):**
   Measured as the total response time subject spent on the task.
   LS is being recorded by the Mouselab program.

3. **Variability of Search across alternatives (VSA):**
   Measured as the population standard deviation of the proportion searched per alternative across the set of available alternatives.
   
   \[
   \{ [ \frac{1}{n} \sum x_i^2 - (\frac{1}{n} \sum x_i)^2 ] / n \}^{1/2}
   \]
   where \( n = \) number of total alternatives
   \( x_i = \) proportion of alternatives \( i \) searched
   
   e.g. \( VSA = \{(1.31 - (5.06/7))/7\}^{1/2} = 0.29 \)
APPENDIX D  -cont-

A SAMPLE OF THE COMPUTATION OF INFORMATION SEARCH MEASURES

4. Direction of Search (DS):

Measured as

\[
\text{Direction of Search} = \frac{\text{Altern} - \text{Attrib}}{\text{Altern} + \text{Attrib}}
\]

Altern is the number of alternative-wise moves within the same alternative, and Attrib is the number of attribute-wise moves of the same attribute. A score of 1.0 represents a strict alternative-wise search, a score of -1.0 represents a strict attribute-wise search.

E.g., Direction of Search = \(\frac{2-6}{2+6} = -0.50\)
APPENDIX E

A SAMPLE OF THE FOUR DIFFERENT STRATEGIES

ADDITIVE LINEAR (AL)

<table>
<thead>
<tr>
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<th>Attr 1</th>
<th>Attr 2</th>
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<th>Attr 5</th>
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</tr>
<tr>
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<td>9</td>
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</tr>
<tr>
<td>Job 5</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

PIS = $\frac{9}{25} = 0.36$

VSA = 0
DS = +1

Each alternative is weighted according to the individual component of the alternative, they are then summed to give an overall value of the alternative. Comparisons are made between alternatives, the one with the highest value is chosen.

ADDITIVE DIFFERENCE (AD)

<table>
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<tr>
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<th>Attr 1</th>
<th>Attr 2</th>
<th>Attr 3</th>
<th>Attr 4</th>
<th>Attr 5</th>
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<tr>
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<td>3(&gt;4)</td>
<td>5(&gt;6)</td>
<td>7(&gt;8)</td>
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<tr>
<td>Job 5</td>
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</tbody>
</table>

PIS = $\frac{15}{25} = 0.6$

VSA = 0
DS = -1

Two alternatives are compared on one attribute, followed by comparison on another attribute. Comparison of the two alternatives continues until all attributes have been examined. The preferred alternative is then used to compare to a new, third alternative in a repeated manner. The final choice is the better of the final pair of alternatives.

* The number in the matrix represents the order of the box being opened
APPENDIX E - cont -

A SAMPLE OF THE FOUR DIFFERENT STRATEGIES

CONJUNCTIVE (CONJ)

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<th>Attri 4</th>
<th>Attri 5</th>
</tr>
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<td>Job 3</td>
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</table>

PIS = 9/25 = 0.36
VSA = 0.32
DS = +1

The decision maker establishes certain minimum threshold level on all attributes, and if an alternative did not meet certain minimum value on all of the relevant attributes, it is rejected.

ELIMINATION BY ASPECT (EBA)

<table>
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<tr>
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<th>Attri 3</th>
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<tr>
<td>Job 5</td>
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PIS = 7/25 = 0.28
VSA = 0.43
DS = -0.6

The most important attribute that the chosen alternative should have is determined. Alternatives that do not possess this attribute are eliminated. The remaining alternatives are then compared on the next most important attribute. This process continues until one alternative remains.

* The number in the matrix represents the order of the box being opened
APPENDIX F

A SAMPLE OF AN INFORMATIONAL’S SEARCH RECORD

<table>
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NB * '-' indicates which box was opened
* Refer to the computer record as to the sequence of the boxes opened

STAGE ONE

COMPENSATORY METHOD
### STAGE TWO
#### NON-COMPENSATORY METHOD

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NB * ' - ' indicates which box was opened.

### STAGE THREE
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NB * ' - ' indicates which box was opened.

132
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APPENDIX F - cont -

A SMAPLE OF A NORMATIVE’S SEARCH RECORD

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135
APPENDIX F -cont-

A SAMPLE OF A DIFFUSE/AVOIDANT’S SEARCH RECORD

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NB * '' indicates which box was opened
* Refer to the computer record as to the sequence of the boxes opened

136
APPENDIX G

I. SAMPLE OF AN INFORMATIONAL’S WRITTEN PROTOCOL

Subject: 161.2

In choosing the job, I looked at the categories that were most important to me, which were feeling of self-fulfilment, intellectual stimulation, affiliation and chance to use special skills.

The steps that I took were that I first looked at all the information cells of each of the jobs to make sure I know what the terms are. <COMPENSATORY> Then I narrowed it down to Job 4 and job 5 <ELIMINATION-BY-ASPECT> because they seemed to represent the highest overall ratings of the categories <COMPENSATORY> that were important to me. After that, I compared job 4 and job 5 in these four categories, and it seemed job 4 have the best rating (high self fulfilment vs moderate; good affiliation vs low). <ADDITIVE DIFFERENCE>

If my chosen job did exist I think that it would be one that required some sort of university training and, for me, it would have to be challenging and help people in some way for me to consider it as providing a feeling of self-fulfilment. I guess it might represent a form of instructor - such as a teacher or else a form of counselling. It could also represent more independent work (not dealing with too many people) such as an editor or a journalist or a writer/lecturer.

NB * < > Strategy in parentheses are added by author.
* Refer to Appendix F for a complete sequence of search.
II. SAMPLE OF A NORMATIVE'S WRITTEN PROTOCOL

Subject 279.2

First I must admit I looked at all the information under wages, then I looked at prestige. I think I was most concerned with wages because in planning to sacrifice as many years as it takes to get the best education, I want to be financially secure the rest of my life. This does not mean that I am greedy, it just means I want the best for my family in being able to support them and myself as best as I can. Prestige means a lot to me because I want to be able to use all skills learnt in university to acquire prestige and authority. However, when I compared the 'prestige' with the 'feeling of self fulfilment' column in, I realized the 'prestige' was only in others' eyes. In that case, I dropped job 6 and went with the job that had the best wage and high self fulfilment but moderate prestige. I was hesitant between Job 3 and Job 4 at first, job 4 had more freedom but authority was low, Job 3 seemed to have a better package overall. I'm not sure what job this could be in real life, because it seemed somewhat contradictory. For example, it did not have a high 'intellectual stimulation' rating, yet it had a high (?) 'authority' rating. I suppose these factors could co-exist, but as for myself, if I had authority, I'd probably find some ways of making it interesting. I'd probably guess this could be a CEO position in a large company.

NB * < > Strategy in parentheses are added by author.
* Refer to Appendix F for a complete sequence of search.
APPENDIX G

III. SAMPLE OF A DIFFUSE/AVOIDANT’S WRITTEN PROTOCOL

Subject: 327.2

1. Fulfilment must be high when I’m working on a particular job.

2. Wage must be reasonable, job 3 provides high wages, so I’ve already decided to choose this job.

<ELIMINATION BY ASPECT>

3. Other factors are not important so I do not bother with them.

4. Job exists in the real world would be a performer (musical) or actor.

NB * < > Strategy in parentheses are added by author.

* Refer to Appendix F for a complete sequence of search.

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APPENDIX H

PROBLEM WITH 'GLOBAL' STRATEGY CLASSIFICATION MEASURE

According to the strategy classification in decision literature, this subject's approach to task is mainly elimination-by-aspect.

However, when decomposing the above search record into segments, a variety of sub-strategies was found.

1. ELIMINATION-BY-ASPECT APPROACH

2. CONJUNCTIVE APPROACH

3. ADDITIVE DIFFERENCE APPROACH

Types of strategies used: Elimination by aspect, conjunctive additive difference.

Number of strategies used: 3

140
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