MONTANA STATE UNIVERSITY

Self-directed learning and intellectual development : a correlation study
by DeAnna Melody Shaw

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Education
Montana State University
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Abstract:
The purpose of this study was to examine the relationship between self-directed learning and intellectual development. A significant factor which influenced this research is the current influx of adult learners in higher education. It was postulated that an analysis of self-directed learning and intellectual development could enhance the theory base from which educators (in both adult education and higher education) practice their profession. A packet of materials was sent to a random sample of students attending Montana State University. The packet of materials included: a demographic questionnaire; the Measure of Epistemological Reflection (MER) - an instrument designed to measure intellectual development along the Perry Scheme: the Oddi Continuing Learning Inventory (OCLI) - an instrument designed to measure self-directedness.

Results of the MER and OCLI were compared. A Pearson correlation indicated that there is a statistically significant relationship between scores on the MER and OCLI. Age and class rank were determined to correlate positively with each instrument. There was no statistically significant difference between men and women on either instrument.

From the results of this study we can conclude that there is at least a tentative relationship between self-directed learning and intellectual development. Further we can conclude that both age and class rank are factors for both intellectual development and self-directed learning.

SELF-DIRECTED LEARNING AND

INTELLECTUAL DEVELOPMENT:

A CORRELATION STUDY

by

DeAnna Melody Shaw

A thesis submitted in partial fulfillment
of the requirements for the degree

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DeAnna Melody Shaw

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submission to the College of Graduate Studies.

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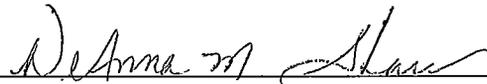
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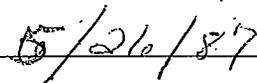
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TABLE OF CONTENTS

vi

TABLE OF CONTENTS--Continued

Page

LIST OF TABLES

ABSTRACT

The purpose of this study was to examine the relationship between self-directed learning and intellectual development. A significant factor which influenced this research is the current influx of adult learners in higher education. It was postulated that an analysis of self-directed learning and intellectual development could enhance the theory base from which educators (in both adult education and higher education) practice their profession. A packet of materials was sent to a random sample of students attending Montana State University. The packet of materials included: a demographic questionnaire; the Measure of Epistemological Reflection (MER) - an instrument designed to measure intellectual development along the Perry Scheme: the Oddi Continuing Learning Inventory (OCLI) - an instrument designed to measure self-directedness.

Results of the MER and OCLI were compared. A Pearson correlation indicated that there is a statistically significant relationship between scores on the MER and OCLI. Age and class rank were determined to correlate positively with each instrument. There was no statistically significant difference between men and women on either instrument.

From the results of this study we can conclude that there is at least a tentative relationship between self-directed learning and intellectual development. Further we can conclude that both age and class rank are factors for both intellectual development and self-directed learning.

CHAPTER 1

INTRODUCTION

Adults older than the traditional age of college students (18-22) are returning to formal learning situations with rapidly increasing frequency. Currently, 43 percent of students on our college and university campuses are over the age of 25 ("What They're Reading," 1985). This increase in older students impacts our institutions of higher education. Some of the obvious areas of impact can be seen in the need for family housing, childcare, and special support organizations which provide a social network. Academic assistance programs for the non-traditional student are also common on campuses. Not so apparent, however, is the difference in adult learning styles which necessitates the need for a difference in the instructional method. The field of adult education is rooted in the conceptual and theoretical assumptions that adults learn differently from children or pre-adults. Theoretically, one way of considering the underpinnings of adult education can be found in the comparison of the pedagogical and andragogical models of education as described by Knowles (1985). The pedagogical model

assumes education to be teacher-centered, and that the
learner is by and large a passive recipient of
knowledge. Students enter into a learning situation
motivated by external pressures of society, parents,
teachers, competition for grades, and/or fear of
failure. The andragogical model, however, assumes that
learning is student-centered. The learner chooses the
direction his or her education will take based on
his/her life experiences and circumstance (Mezirow,
1981; Spear and Mocker, 1984). The student has chosen
to enter into the learning situation, and is motivated
by a desire to address a problem or issue in his/her
life and by the assumption that the knowledge will
enhance the quality of his/her life.

Given the andragogical model as a definition of
adult learning, it would be easy to make the assump-
tions that all adults are self-directed in their
learning, or that only adults are self-directed in
their learning. The following discussion on self-
directed learning (and the findings of this study)
should serve to clarify why these assumptions may be
innaccurate when applied to the population as a whole.

Overview of Self-Directed Learning

Self-directed learning is an illusive concept be-
cause it has been given many descriptive definitions,

but little in the way of a theoretical focus. Is self-directed learning a personality construct, a learning style or a method of instruction? If it is an instructional method, are age, maturity, and intellectual development factors for the appropriateness of this particular method? Is it influenced by socio-economic factors?

There exists a multitude of definitions to describe self-directed learning. These definitions take their place on a continuum that has as one extreme the notion that self-directed learning is a change in perspective or awareness (Mezirow, 1981; Tough, 1979); the other extreme of the continuum would suggest that self-directed learning exists within a more rigid set of parameters (Penland, 1981). Knowles (1975) offers a more specific and less extreme definition of self-directed learning.

> ...'self-directed learning' describes a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing strategies, and evaluating learning outcomes. (p. 18)

This definition, while broad enough to satisfy most adult educators, is merely descriptive of a self-directed learning process. It does not address why individuals choose this process. It does not explain what types of individuals choose this method nor does

it address the relative effectiveness of this learning style. The lack of a theoretical base to explain the how's and why's of self-directedness is a concern of many researchers. (e.g., Gibbons, 1980; Mezirow, 1981; Penland, 1981; Cross, 1981; Oddi, 1983).

The definitions which follow are related to the concept of self-directed learning and are presented as these terms are interpreted for this study.

A self-directed learner (for purposes of this study) is someone who possesses the personality traits which distinguish a self-directed learner from an other-directed learner.

An adult (for purposes of this study) is someone who is 25 chronological years of age or older. The age of 25 is an arbitrary number chosen to help define the population for this study. A person's individual experiences and maturity rather than his/her chrono-logical age are believed to be a greater influence as to whether or not he/she is "adult" in his/her world perspective.

Pedagogy is a process of education which is teacher-centered; the learner is a passive recipient of knowledge.

Andragogy is a process of education which is student-centered; the learner is responsible for

initiating, following through with, and evaluating
his/her own learning/educational situation.

Thus far, self-directed learning as a concept with
theoretical underpinnings is an enigma to the field of
education because it is so many things to so many dif-
ferent individuals. Therefore one might speculate its
relevance has not been proportional to the amount of
attention it has received. To individuals who take
this view, the many definitions of self-directed
learning suggest that it is merely a conceptual idea to
be recognized, to be made aware of, but that the
relevancy ends there with many descriptions of many
instructional methods. Research can help to develop a
theoretical foundation which in turn will establish
self-directed learning as an instructional method.

Self-directed learning can be an avenue for many
people to get the kind of education they would like to
have to enhance their lives, but might not access
otherwise. Instead of guarding the educational process
as if it had some mystical power, educators should be
allowing education its own autonomy to empower the
individual. The mystique surrounding education must be
removed without removing this ability to empower. We
are not so far removed from Paulo Freire's (1970)
description in Pedagogy of the Oppressed of teachers,
the oppressors, who pour the desired knowledge into the

receptacles who are their students, the oppressed.
This method distorts the world to be a set of absolutes
waiting to be learned.

Researchers in education have failed, thus far, to
establish a strong theoretical base for self-directed
learning; although some have attempted the development
of theory (Mezirow, 1981; Penland 1981; Oddi, 1983).
This failure has been a disservice to the field in a
number of ways. Without a theory, any definition of
self-directedness is tenuous and at best merely
educated conjecture. Without theory, assessment of the
self-directed learner, or those projects which are
considered self-directed learning is very difficult.
It is difficult to qualify something without a standard
of measurement. Finally, without theory, research into
the implications and application of self-directed
learning is little more than an educated assumption.

The difficulty in establishing a theoretical base
for self-directed learning is multi-faceted. There are
some (e.g., Oddi, 1985) who would theorize self-
directed learning as primarily a personality construct.
A person possesses more or less of the personality
traits that allow him/her to be self-directed in
his/her learning. Another school of thought (Spear and
Mocker, 1984; Brookfield, 1984) suggests that a
person's ability to be self-directed is influenced

primarily by his/her socio-economic circumstances.
This is a consideration which may be substantially
supported by Maslow's (1970) hierarchy of needs. A
third body of literature views self-directed learning
as an instructional method related directly to
intellectual development. This study examines
self-directed learning as a personality related concept
and how this aspect of self-directed learning is
correlated to cognitive development. The following
section will discuss intellectual developmental theory
in more depth.

Intellectual Development and the Perry Scheme

How do adults make meaning out of their world
around them? Developmental theory attempts to address
this question. Adult developmental theory can be
broken down into three sub-categories: typological
theory, psycho-social theory and cognitive develop-
mental theory. Typological theories concern
temperament and socialization. The Myers-Briggs Type
Indicator (Myers, 1980) and the work of Carl Jung
(Jung, 1964) are two examples of typological theory.
Psychosocial theory describes how an individual reacts
to and interacts with his environment. Chickering's
vectors of development discusses this type of inter-
action (Chickering, 1972). Finally cognitive

developmental theory describes the way we view our world and the way we reason about this world. Kohlberg's theory of moral development (Kohlberg, 1980) and Perry's theory of intellectual development (Perry, 1970) are examples of cognitive developmental theories.

This research study is concerned with this last sub-category of developmental theory. Cognitive developmental theory can be described by a number of characteristics. The following definitions are offered to further explicate the concepts of cognitive or intellectual theory.

Cognitive is a term used to describe the processes of thought - how we think, reason, understand. For purposes of this study, cognitive and intellectual will often be used interchangeably (except where more specifically defined by the text).

Development suggests a progressive movement towards the more inclusive or complex.

Stage or position describes a particular set of assumptions about how we come to "know" our world. Stages or positions are hierarchical, sequential, they describe "how" we see not "what" we see, and finally each stage is qualitatively different from the preceding stage. What occurs before and after a stage or position could be considered periods of transition.

Growth describes, in general, progress in development. It is generally valued positively. That is, growth is traditionally viewed as more productive for the individual than is non-growth. Stages or positions are one way to delineate growth.

Experiential dissonance is an experience which when presented to an individual should cause a dilemma. The dilemma is effectively solved when the individual's reasoning structure changes. Dissonance is used to promote growth in development.

Accommodation and assimilation are the two methods individual's use to make meaning from the experiential dissonance. Assimilation is the process of trying to "fit" the dissonance caused by the experience into current reasoning patterns. This can be through selection, simplification, or distortion. Accommodation is the process of changing the reasoning patterns to "fit" the dissonance caused by the experience. This can occur through transforming or recombining previous reasoning structures to accommodate the new experience.

Lifespan development is a concept which suggests that development occurs from the moment of birth to the moment of death.

Student developmental theory looks specifically at the growth in development during the college years.

Student development can be seen as a period of intense development in the course of an individual's lifespan development.

Often developmental theories are represented by a series of sequential stages in which a person's world view or perspective is enhanced by a series of experiences which cause a degree of cognitive dissonance. This dissonance challenges a person to consider more options or different types of options in their problem solving. The dissonance leads a person from one stage or position into the next. Because intellectual development is sequential in nature, each subsequent stage encompasses the perspective of the previous stage. Further, these stages are hierarchical and sequential and for the most part irreversible. Once an individual has fully established a new perspective and way of reasoning it is difficult for him/her to return to a more limited perspective and reasoning structure.

The Perry Scheme, published under the title, Forms of Intellectual and Ethical Development in the College Years: A Scheme (Perry, 1970) is one theory which describes the intellectual development of adults. The Bureau of Study Counsel at Harvard University, under the direction of William Perry, spent twenty years examining the responses of college undergraduates to their learning environment. What emerged from this

study was a theoretical description of the develop-
mental stages individuals pass through during their
college experience. There are nine positions on the
Perry Scheme. A more comprehensive discussion of the
Perry Scheme and each of its "positions" is offered in
Chapter 2.

An understanding of how students reason about
their world can inform educators about how to present
information, interact with students, and create the
most conducive learning environments. For example, the
Perry Scheme examines how individuals view authority
(the instructor), the nature of truth, and peers. It
describes the decision-making process individuals
progress through and how individuals view evaluation.
With this information, instructors may more adequately
challenge and support their students. This challenge
and support can occur through learning activities per
se or through the discussions about the learning
activities.

Statement of the Problem and Research Hypotheses

Is intellectual development related to self-
directed learning? Can we make assumptions regarding a
person's ability/preference for self-directed learning
based on their level of intellectual development? If
individuals progress in intellectual development can

their ability/preference for self-directed learning
also progress? Can and should educators use this
knowledge to enhance an individual's ability/preference
for self-directed learning? These are only a few of
the issues to consider when examining the relationship
between cognitive development and self-directed
learning. The purpose of this study is to empirically
examine this relationship. It is not expected that
this study will provide conclusive answers; rather, it
is expected that this project will provide some useful
data regarding the relationship between intellectual
development and self-directed learning - data that will
ultimately create more questions for investigation.

This study examines the relationship between a
person's ability/preference for self-directed learning
and that person's intellectual development as described
by the Perry scheme. There are nine operational
hypotheses tested, statistically, by this study. These
are specifically presented in Chapter 3. It is
expected that a statistically significant correlation
will be found between a person's ability/preference for
self-directed learning as measured by the Oddi Continu-
ing Learning Inventory (Oddi, 1984) and a person's
position on the Perry Scheme of Intellectual Develop-
ment as measured by the Measure of Epistomological
Reflection (Baxter-Magolda and Porterfield, 1985).

Leeb (1983) found "no statistically significant
associations" (p. 192) between positioning on the Perry
Scheme (as measured by an essay protocol) and self-
directed learning [as measured by the Self-Directed
Learning Readiness Scale (Guglielmino, 1977)]; however,
Leeb herself noted that her findings should be con-
sidered speculative as they were derived from
tangential data from her study. This study will be
considered in greater depth in Chapter 2.

Significance of the Research Problem

The significance of this study will be examined by
considering some factors involved with this study.
These factors include: the relationship between
chronological age and ability/preference for self-
directed learning and/or intellectual development;
differences among individuals at different levels of
educational attainment; and the differences between the
results for men and for women.

The purpose of this study is to gather additional
empirical data on self-directed learning and its rela-
tionship to intellectual development. To this point in
time, much conjecture has been posited to explain and
define self-directed learning. It is this author's
belief that only through empirical data collection,
will the field of adult education be able to form a

more homogeneous concept of self-directed learning and
the factors affecting it.

The significance of this study is derived from the
quality of data produced. This data provides informa-
tion to help test, empirically, a theoretical frame-
work, and to clarify the concept of self-directed
learning. A "theory" per se has not been generated by
the data of this study; however, the data contributes
to a body of knowledge that can be used to more clearly
define theory. Another significant factor to consider
in this study is whether or not self-directed learning
is a developmental concept. It was presumed on the
outset of this study that a positive relationship found
between self-directed learning and intellectual
development could improve the instructional method by
helping instructors to develop the self-directed
learning tendency in the individuals they instruct. In
addition, this study should help clarify for
practitioners, in student affairs-related occupations,
how they can better serve their new clientele - the
older student. The information gained from this study
will also help clarify the findings of Leeb's study
(1983). Finally, and from a pragmatic view, this study
will help add to the validation of both the MER and
OCLI.

15

Assumptions and Limitations

The construction of this research study has
inherent assumptions. Primarily, it is assumed that
self-directed learning has a developmental property.
This developmental property is the degree to which
persons are able to and choose to practice self-
directed learning. Self-directed learning is not
viewed as a static method of learning, but rather on a
continuum of personal involvement. Secondly, it is
assumed that the relationship between self-directed
learning and intellectual development can be
quantified, and this is reflected by the scores on the
OCLI and the MER.

A major limitation of this study concerns the
demographics of the population from which the sample is
drawn. This study was conducted at Montana State
University in Bozeman, Montana, and the sample,
regardless of the random selection process, was fairly
homogeneous. Statistically the largest portion of the
university's population is from small towns in Montana
(Astin and Groseth, 1984). The population of students
attending Montana State University could be described
as largely white, middle class, rural individuals.

Another possible limitation of this study is rela-
tive newness of both instruments. There are not, at

this time, a large number of published reports using either of these instruments; therefore, it is difficult to generalize about the validity of the instrument from study to study. There are specific limitations inherent in both instruments which will be more fully discussed in Chapter 3. There are also specific reasons for why these instruments were chosen, including cost of administration, validity and reliability, ease of administration, and the author's familiarity with the instruments.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter will examine the literature base of cognitive developmental theory and self-directed learning that is most relevant to this study. The literature related to cognitive development, particularly as reflected by the Perry Scheme is quite extensive as researchers have investigated, many aspects of the theory (e.g., Knefelkamp, Widick, and Parker, 1978; Knefelkamp, 1981; Baxter-Magolda and Porterfield, 1985). The literature related to self-directed learning is also quite extensive (e.g., Knowles, 1975; Tough, 1979; Gibbons, 1980; Cross, 1981; Mezirow, 1978; Brockett, 1983; Oddi, 1983; Leeb, 1983; Brookfield, 1984). One reason for this recent interest in adult education theory is the influx of non-traditional students (i.e., students over the age of 25) on college campuses. Little research, however, has been conducted regarding the relationship between cognitive developmental theory and self-directed learning. Therefore, the literature base that overlaps both fields of study is limited.

The purpose of this chapter is to present selected literature on both concepts so that the question of the relationship between the two can be more fully explored. Cognitive developmental theory and the Perry scheme of intellectual development will be considered first. In addition to the discussion of theory, an analysis of assessment issues for intellectual development and the instrumentation used will be presented. The second section of this literature review concerns self-directed learning's conceptual framework. Literature relevant to the research and theories of self-directed learning will be reviewed, as well as of the instrumentation for self-directedness. Finally, the literature which explores the relationship between cognitive development and self-directed learning will be reviewed.

Cognitive Developmental Theory
and Intellectual Development

Cognitive developmental theory suggests that individuals will change their patterns of reasoning. It suggests that as current reasoning patterns cease to assimilate an issue or event (and making meaning from the experience is deemed necessary), then an individual's patterns of reasoning will expand to fit the experience. A classic example might be the child,

who formerly considered his parents to be infallible, suddenly realizes that a parent has made a mistake. Under the previous reasoning structure the mistake would never have been seen, but now the child is confronted with the idea that perhaps this parent isn't infallible. The child has two choices: 1) to ignore the mistake and continue to believe that the parent is infallible; 2) to consider the idea that, at least in this situation, the parent is fallible. The second choice would be a step towards growth in his/her development since the reasoning about parents/authority change to explain the experience.

The Perry Scheme: A Cognitive Developmental Theory

The Bureau of Study Counsel at Harvard University, under the direction of William Perry, spent twenty years examining the reasoning of college undergraduates about their learning experiences. What emerged from this study was a theoretical description of the developmental stages individuals pass through to gain a more inclusive perspective of their world. This theory was published under the title Forms of Intellectual and Ethical Development In The College Years: A Scheme (Perry, 1970) but has since been more commonly referred to as "the Perry scheme". There are nine positions on the Perry scheme which represent growth in

development and can be divided under three broad
categories: dualism, relativism, and commitment.

The first three positions of the Perry scheme fall
under the category of "dualism". A person at the first
position, "basic duality", views the world in terms of
absolutes. The authorities have "the right" answer.
Multiplicity is not perceived at this position. A
person at the second position, "multiplicity pre-
legitimate", perceives multiple options; however, only
one authority or option is considered to be valid. The
third stage is entitled "multiplicity subordinate". At
this stage, a person recognizes that the authorities
may not always have "the" answer. The right answer may
be unattainable, but this is only a temporary situa-
tion. The right answer may be known at some point in
the future.

Positions 4a, 4b, 5, and 6 all belong to the
category entitled "relativism". A person at position 4
may relate his/her experience in either or both of two
ways. Position 4a, "multiplicity correlate", acknow-
ledges that when there are no absolutes, everyone has a
right to his/her own opinion. Position 4b, "relativism
subordinate", acknowledges that authorities can have
multiple opinions/views because they want others to
think in terms of multiple options. At position 4 a
person can choose to be either adhering or

oppositional in his/her opinions. An adhering 4 is
more likely to accept _any_ idea or perception as equally
accurate. An oppositional 4 is more likely to argue
that regardless of what his/her opinion is, that
opinion is just as valid as anyone else's opinion. At
position 5, a person moves into the "relativism
correlate" position. Relativism is viewed not in terms
of what the authority wants for us, but rather how the
world and authorities really are. At position 5 a
person views everything as relevant within a context.
Each person's opinion may be relevant in the larger
picture, but may not be relevant in a particular
context. At position 6, "commitment foreseen", a
person begins to recognize the need for commitments in
a relativistic world.

The final category of positions is the
"commitments" category. Position 7, "initial commit-
ment", is the stage at which a person first actualizes
and examines the implications of the first commitment.
At position 8, "orientation in implications of commit-
ment", the complete implication of commitments is
realized. Commitments need to be balanced, which lead
a person to position 9, "developing commitments". At
position 9, commitments and their full implications
become a considered part of a person's reasoning and
decision making process. There are some theorists

22

(e.g., Kitchner and King, 1981; Baxter-Magolda and Porterfield, 1985) who would argue that no developmental change occurs past position 5. This argument is based on the logic that no qualitative differences occur after position 5 or between positions 6,7,8, and 9. In this view positions 6-9 are seen as a process that reoccurs throughout adulthood.

A person's perspective and reasoning structure is fairly consistent from subject to subject. How a person views authority, for example, should be fairly close in reasoning structure to how that person views the nature of truth. If a person has a dualistic view of God and human nature, he/she will probably have a dualistic, right/wrong, view of the nature of truth.

Assessment Along the Perry Scheme

The Perry Scheme was developed through the analysis of a longitudinal study which used an essay and interview format. Assessment of positioning along the Perry scheme can occur through an interview, an essay, a recognition instrument, or a short answer questionnaire. Assessment through interviews requires that a trained investigator ask a series of questions which are designed to establish that person's reasoning structure. Each question is followed by a series of follow-up questions which probe deeper into the response. The essay format is a standardized, written

prototype of the interview format. A recognition instrument asks the respondent to identify a perspective most like his/her own from a list of possibilities. Each of these formats have been used to assess positioning along the Perry scheme.

More recently, Taylor and Porterfield (1983) have developed a short answer questionnaire as an assessment tool. In a recent article (1985) they addressed some of the difficulties inherent to the other methods of assessment. These difficulties include:

1. Although an interview technique is the most comprehensive form of assessment - it is the most time consuming method and requires highly trained interviewers and scorers.

2. Research by Rest (cited in Baxter-Magolda and Porterfield, 1985) indicates that respondents may be able to recognize and prefer a cognitive stage which is higher than the one they can produce (and presumably the one they can produce is their position). Therefore, a simple recognition instrument may be more likely to reflect where an individual would prefer to be rather than where he/she actually is.

3. There is a need to distinguish between content and justification for the response. Because the content can be the same for several stages on the scheme, the "why" behind the content is more enlightening. The

"why" is not reflected in a response format questionnaire.

With these difficulties in mind, Baxter-Magolda and Porterfield (1985) developed an instrument entitled the "Measure of Epistemological Reflection" (MER). This instrument was developed, according to the authors, "to provide specific stimuli and a standard scoring procedure to reduce the degree of inference necessary to assign a Perry level" (p. 343).

The MER is a short-answer response format questionnaire. There are six domains which are rated separately: decision making, role of the learner, role of the instructor, role of peers, evaluation, and view of knowledge, truth, or reality. Individuals can be rated differently within the different domains. For example, a person may generate a position 2 response to the role of the instructor and a position 3 response to decision making. However, individuals will rarely vary more than one position level from domain to domain. The total protocol rating (TPR) is obtained by looking at all 6 domains. If the same position rating shows up in at least 2 of the domains, that position is reflected in the TPR. For example, if an individual has a position 4 rating on 2 of the domains and a position 5 rating on 3 of the domains and a position 3 rating on 1 domain, the TPR would be shown as 5(4). In

this case 5 is the dominant position, but a tendency is
still evident for position 4. (The position 3 rating
is not reflected in the TPR because it occured only
once.) This TPR suggests that this individual has just
made the transition from position 4 to position 5
reasoning. Position ratings that are equally distri-
buted among the domains are shown as 2-3. This TPR
suggests that an individual is beginning to make the
transition from position 2 reasoning to position 3
reasoning, but has not fully moved into position 3.
The MER is based on the premise that no significant
developmental changes occur past position 5. There-
fore, the highest positioning assigned through the MER
assessment is 5.

The MER requires rating by certified raters. To
be certified an individual must rate protocols for 2Ø
individuals and must obtain approximately a .8Ø corre-
lation on the TPRs with the expert raters. Reliability
of the MER was tested for interrater agreement between
highly trained raters, an expert on the Perry Scheme,
and two self-trained raters. Comparison with the
Measure of Intellectual Development (MID), a similar
instrument measuring intellectual development along the
Perry scheme (Kneflekamp, 1974; Widick, 1975 as cited
in Baxter-Magolda and Porterfield, 1985.) was also

conducted to test the correlation between the two
measurement tools.

In one research project (Baxter-Magolda and
Porterfield, 1985), 155 participants (79 men and 76
women) were sampled from four groups including college
freshmen, seniors, graduate students under the age of
30, and graduate students over the age of 30. These
participants had been randomly selected (except for the
freshmen who were students in a psychology class) from
students at a large state university, in 1982. The
groups were fairly homogeneous across socio-economic
indicators.

The MER and the MID were given to the sample
group. The order of the administration of the instru-
ments was reversed for half of the respondents to avoid
bias in administration of the instruments. Reliability
of the MER was assessed internally by comparing the
consistency between the raters. The MER was compared
to the MID to establish concurrent validity.

The results of this initial study showed that the
internal validity among the raters was quite high.
However, there seemed to be quite a discrepancy between
the MER and the MID. One reason cited for this low
correlation was the lack of similar variability in the
MID scores. Also the MER, according to the authors,

generated a greater amount of data. The difference in the type of response elicited could account for the low correlation. The authors cite four follow-up studies which they feel substantiate the validity of the MER. They also recognize the need for a longitudinal study to further their claims of validity for the MER.

The study of intellectual development and applying the Perry scheme to the practices of both adult education and higher education is another avenue educators can use to increase their effectiveness.

Self-Directed Learning Theory and Research

In the literature, the term self-directed learning has become synonymous with self-planned (Tough, 1971), self-initiated (Penland, 1981), self-educated (Gibbons, 1980), among other terms. As self-directed learning seems to be the term most commonly used, this will be the term used in this report. The definitions of self-directed learning are also many and varied. These definitions are spread across a continuum. This continuum represents degrees of self-directedness. What qualifies as self-directed behavior (whether or not that behavior is personality based, instructionally based, or cognitively based) differs considerably from one theorist to the next. On one extreme of the continuum is Mezirow (1981) who links self-directed

learning to perspective transformation or a change in a person's awareness as an aspect of the emancipatory process of the adult learning process. Close to Mezirow on the continuum, but a little farther towards the middle is Tough (1971) who recognizes within broad parameters almost any deliberate effort to gain knowledge or create a change of view as self-directed learning. Somewhere in the middle of the continuum is Knowles (1975) who describes self-directed learning as a process of self-initiated, self-planned, self-implemented, and self-evaluated learning. On the opposite extreme of the continuum is the traditional school view of the independent study project – an academic project initiated and implemented through traditional, academic parameters.

The elusiveness of theory for both adult education, in the broader sense, and self-directed learning, in particular, is seen in the literature as frustrating and defeating to this field of study (Tough, 1979, Mezirow, 1981). Most practitioners and researchers in the field have recognized a need for theory (e.g., Gibbons, 1980; Mezirow, 1981; Penland, 1981; Cross, 1981).

Cross (1981) delineates three major stumbling blocks to theory building in adult education. First, she notes that adult education is seen by adult

educators as a consumer-oriented service. Thus the
task is not always discovering what is most effective,
but rather what is most wanted. Second, Cross notes
that there are relatively few scholars in adult
education. Most adult educators feel that their first
obligation is to serve the needs of the adult learners.
The strongest argument Cross makes is her third point.
She suggests that the multidisciplinary nature of adult
education (e.g., pyscholory, sociology, gerontology,
and physiology) makes it difficult to assess where the
focus of an adult education theory should be placed.
Further, as Cross implies, it is not likely that one
theory will ever be conclusive enough to address every
essential aspect of adult education. She suggests that
perhaps it would be more useful to have several
theories, each examining in detail one of the disci-
plines of adult education.

In reviewing the work of several theorists who are
attempting to create a theory on adult education, Cross
discovered five similarities among theories and sug-
gests that they are very applicable to concepts
involved with self-directed learning. First,
interaction between the person and the environment is
seen as an important component. Each theory reviewed
is grounded in the belief that each individual has some
control over his/her environment. Second, a low

self-esteem is counter-productive to the processes of adult education. Third, incongruence and dissonance are common themes throughout adult education. Forth, Maslow's (1970) hierarchy of needs is also a common concept to adult education theories. Finally, motivation is seen as being impacted by the perceptions of the positive and negative forces surrounding the learning situation, and by the expected rewards of the learning situation.

This work by Cross (although more specifically related to adult education rather than self-directed learning) addresses issues very relevant to self-directed learning. The following is a review of the more prominent research projects in self-directed learning that suggest some of the current theoretical assumptions.

Malcolm Knowles has contributed much to the literature base for self-directed learning. Self-Directed Learning: A Guide for Learners and Teachers (Knowles, 1975) is considered by many a significant contribution to the literature. This is a how-to book that guides the learner towards self-directedness while at the same time guiding the teacher through the process of losing the center spotlight to become a facilitator of learning. Recently, Knowles (1985) has delineated the differences

between pedagogy and andragogy.. He describes pedagogy as a teacher centered monologic approach to learning. The learner is pictured as a blank slate to be written upon, or as Friere (1970) has described the traditional concept of the student, as a recepticle to be dumped on. Andragogy is described as a student-centered approach to learning. It is described in terms of the adult and the adult is described as one who by definition is self-directed.

Another significant contribution to the literature of self-directed learning is The Adult's Learning Projects. (Tough, 1979) conducted interviews with 66 adults in 1970. This survey focused on the number, type and variety of learning projects the adults had undertaken in the preceeding year. A learning project was defined as, "simply a major, highly deliberate effort to gain certain knowledge and skills (or to change in some other way)" (p. 1). All but one individual in Tough's study had participated in at least one learning project (some were involved with as many as fifteen or twenty; the median number was eight). Further, he discovered that adults spend from 100 to 2000 hours per year on learning projects (687 hours was the median number of hours for the adults in this study). The estimated number of hours may be a conservative number as only one-third of the learning

projects were complete or dormant at the time of the survey. Another important finding of this study was that 68% of the learning projects undertaken by the adults in this study were planned primarily by the learners themselves; they were self-planned/ self-initiated projects. This study supported, empirically, what most adult educators knew intuitively – that self-directed learning was a common practice among adults. Further, the evidence from this study would suggest that for many adults self-directed learning was the preferred method of study/instruction.

Gibbons, et al (1980) took a more qualitative approach to the research of self-directed learning. They studied the biographies or autobiographies of twenty individuals of prominence who, with one exception, had no formal education beyond high school. From this study, Gibbons and his associates were able to extrapolate fourteen principles and implications related to self-directed learning. Some of the more relevant factors are: 1) the locus of control for a self-educated person is himself/herself, and it is the task of the instructor to help students internalize control over their own learning; 2) self-directed learning is usually more focused, and the instructor should help students identify their areas of interest; 3) learning is for immediate application (self-directed

learners tend to be pragmatic in their learning activities), and the instructor should integrate theory with practice; 4) self-educated individuals tend to be self-motivated; instructors should encourage students to set their own goals and objectives; 5) self-educators are motivated by the "rewards" of the project; instructors can help a student follow-through to the attainment of the reward; 6) self-educated people tend to find a method of study that is unique to them and their needs; instructors should encourage students to try a variety of learning styles to find the ones that work best for them; 7) self-educated adults use their skills to find the resources and direction they need; instructors can help encourage the drive and independence students need to seek out their own guidance. Gibbons states that, "teaching for self-education involves helping each student to become an expert, a participant, and a person" (p. 55).

Mezirow (1981) described a theory of adult education based on the work of Habermas (cited in Mezirow, 1981). He describes perspective transformation as central to the emancipatory aspect of adult learning. The emanicpatory domain of adult learning is seen as a prerequisite for a person's ability to be self-directed in his/her learning. This observation seems consistent with the views of authors such as

Gibbons (1980) and Oddi (1983) who have concentrated on
the personality constructs of self-directed learning,
and by Knowles, (1970) when he describes the differ-
ences between andragogy and pedagogy). Perspective
transformation, according to Mezirow, is the experience
of processing critical events in one's life by
integrating the past and therefore moving to a new
understanding, and a new perspective. The process of
perspective transformation is delineated by the
following events. First, a significant emotional
experience occurs and disorients the individual which
in turn causes self-examination leading towards a
critical assessment of beliefs and values. Next, is
the recognition that others have shared this
disorientation which in turn allows the individual to
explore options with others. Finally, once a new
option is acted upon and confidence in this new role is
gained, a plan of action is created; new skills and
knowledge are tried until the individual feels more
comfortable with their new perspective. The process
can be sudden if the significant emotional experience
is disorienting enough. Or the transition to a new
perspective can happen gradually over the course of
time with several less demanding, less disorienting
events.

It is Mezirow's contention that an understanding
of perspective transformation will enhance the adult
educator's ability to integrate self-directed learning
as an instructional model. Mezirow (1981) describes a
self-directed learner as one who:

> ...has access to alternative perspectives for
> understanding his or her situation and for giving
> meaning and direction to his or her life, has
> acquired sensitivity and competence in social
> interaction and has the skills and competence
> required to master the productive tasks associated
> with controlling and manipulating the environment.
> (p. 21)

Further Mezirow (1981) suggests that perspective
transformation in a related context with self-directed
learning offers, "the essential elements of a compre-
hensive theory of adult learning and education" (p.
22).

Spear and Mocker (1984) took yet another approach
towards looking at self-directed learning. Rather than
looking at the internal characteristics of the indivi-
dual, they looked at the external characteristics of
the individual's circumstance. They conducted a
secondary analysis of data collected previously and
detected some environmental factors which describe the
ways individuals organize and initiate learning
projects. These factors become the organizing
circumstance - the events which dictate the need,
interest, motivation for the learning situation. Their
qualitative analysis was taken from a survey-based

research project which compared individuals who were

involved in formal learning situations, with indivi-

duals involved in self-directed learning projects.

From this analysis they drew the following hypothesis:

> The Organizing Circumstance, rather than
> preplanning by the individual, is the directing
> force behind much, perhaps most, self-directed
> learning for this population. (p. 4)

Although the specific organizing circumstances

vary from individual to individual, there are some

themes that seem common to most self-directed learners.

A most central theme involves the concept of change.

Impetus for learning often stems from a positive or

negative change in a person's life circumstances. The

change in circumstances typically does not provide very

many opportunities or resources for the learning situa-

tion; therefore, "the structure, methods, resources and

conditions for learning are provided or dictated by the

circumstances" (p. 5). Also, learning is not neces-

sarily a linear progression, but rather circumstances

seem to suggest the next logical step. The difference

here seems to be that the individual may see a linear

progression in the light of hindsight; however, this

person did not nor could they have planned that linear

progression proactively.

Spear and Mocker are suggesting that circumstance

plays a large part in organizing the self-directed

learner's choices about learning. The study they

analyzed seems to contradict Tough's (1979) research which stated that self-directed learners were very planful in their approach to learning. It is interesting to note the significance that Spear and Mocker found regarding the change in circumstance as an initiating factor for self-directed learning. This observation, in part, would support Mezirow's (1981) theory of "perspective transformation." Brookfield (1984) makes several critical comments regarding the existing research encompassing self-directed learning. Several of these points address the lack of research concerning some of the environmental factors of learning. He believes that the research has focused primarily on white, middle class America, and that the working classes and minorities have largely been ignored. Concentration on adults whose educational attainment level is above the national norm is one characteristic Brookfield finds most alarming in the current research. Further, he notes that with only a few exceptions the research has been very ethnocentric, considering mainly the white population in America. Brookfield also states that self-directed learning research has also failed to adequately address the social climate surrounding the individual. Learning networks, informal learning exchanges require the individual to participate in his/her social setting.

Learning in this way is still self-directed rather than other-directed, but it necessitates an individual's interaction with others.

In response to Brookfield's critical assessment, Brockett (1985) suggests that Brookfield had a narrow view of "hard-to-reach" populations. Brockett cited his own research which targeted an elderly population as well as several others which he felt offered some of the kinds of data that Brookfield has been quick to say doesn't exist, or only exists in relative scarcity.

Measurement of Self-Directed Learning

The importance of being able to measure self-directed learning lies in the need that educators have for knowing their students and how best to teach them. There exists, at this time, only two instruments for assessing self-directed learning: The Self-Directed Learning Readiness Scale (Guglielmino, 1977), and The Oddi Continuing Learning Inventory (Oddi, 1983).

The Self-Directed Learning Readiness Scale is an instrument which examines to what degree individuals perceive themselves to be self-directed in their learning. It is a 58 item, Likert scale design. The instrument has been used frequently in research on self-directed learning. (e.g., Brockett, 1983; Leeb, 1983)

Brockett (1985) raised several concerns with the Self-Directed Learning Readiness Scale (SDLRS). He raised a concern with the appropriateness of the instrument with certain populations (i.e., individuals with little formal education). Brockett also concluded that twelve of the fifty-eight SDLRS items did not significantly correlate with the entire instrument. The use of double negatives in some items added to the confusion of respondents – accentuating some of the correlation concerns. Brockett also noted that the SDLRS seemed to place specific value on book learning as a preferred tool for self-directed learning.

In response to some of the criticisms of the SDLRS, Oddi (1984) developed a new instrument to measure self-directed learning, the Oddi Continuing Learning Inventory (OCLI). Her study had three specific goals:

1. to describe a theory of the personality characteristics of the self-directed learner.
2. to develop an instrument to assess these learners.
3. to validate the instrument, empirically. (p. 98)

She began by reviewing the relevant literature on the subject; and, by drawing on some common themes, derived three dimensions of self-directed learning. Each dimension lies on a continuum with polar opposites. One pole describes a high inclination towards a characteristic of self-directed learning; the

opposite pole, a low inclination for self-directed

learning. These continuums are labeled as follows:

1. Pro-active Drive versus Reactive Drive (PD/RD)
2. Cognitive Openness versus Defensiveness (CO/D)
3. Commitment to Learning versus Apathy or
    Aversion to Learning (CL/AAL)   (pp.98-99)

A pilot instrument was derived from the analysis

of 100 items. This pilot instrument consisted of 31

items and was given to 287 graduate students in law,

nursing, and education. Five items were discerned to

be unreliable in the item analysis and were subse-

quently eliminated from the scale. The remaining 26

items had a raw coefficient of .750. A validation

study was conducted to obtain estimates of reliability

and to discern internal and external validity. No less

than 7 items were included for each dimension.

Validation data were obtained by administering this

instrument and a selected validation instrument. Four

separate validation instruments were used. Each

instrument correlated to a particular component of the

OCLI. The reliability of internal consistency was

.875, while test/retest reliability was .893. The

author noted that these were preliminary findings and

that more data should be collected and that the

instrument should be refined further.

Self-Directed Learning and Intellectual Development

The concern for this study was the relationship between intellectual development and self-directed learning. Kasworm (1983) considers self-directed learning as part of a broader context which includes the cognitive and affective factors. She views change, growth, and development as intregal parts of the self-directed learning process. She outlined five considerations for a paradigm of self-directed learning that assumes a developmental stance. These considerations can be related to the definition of stages which was presented earlier; her considerations describe levels which are hierarchical, sequential, and qualitatively different levels of development. They are as follows:

1. Levels of development imply a qualitative difference in the individual's mode of thinking about him/herself in the personal world.

2. These levels represent a complex process including:
    a. level of skill/behavior for engagement in learning inquiry
    b. cognitive capacities and competencies
    c. affective and value orientations

3. There is an invarient sequence for these levels - one must logically follow another.

4. Each level represents the individual's perceptual and cognitive structure of thought.

5. Each level is necessary to the total process
    of development and has both positive and
    negative potentials. (p. 33)

Further, Kasworm suggests a three dimensional

framework for considering the relationship between

self-directed learning and cognitive development. This

framework includes: a) specific levels of behavior/

skill to engage and complete the action of self-

directed learning; b) specific levels of cognitive

complexity necessary for specific nature of acts of

learning; c) specific levels of affect/value towards

orientation of knowledge and learning actions.

Kasworm suggests that considering self-directed

learning within this framework presumes several points.

It presumes that there exists both quantitative and

qualitative differences in generic skills/knowledge,

and values of self-directed learning. It presumes that

skills, knowledge and values evolve over the lifespan

and, "incorporate a person-environment referent in

relation to depth and breadth of engagement in

self-directed learning" (p. 45). Kasworm conludes her

remarks by suggesting a manner in which instructors

could create an environment more conducive to promoting

self-directed learning, "Thus, instructors who wish to

create self-directed learning environments would

provide sufficient challenge for both the varied levels

and depth of complexity for self-directed learning

development" (p. 45).

Cameron (1984) has noted that the accelerating rate at which adults are returning to post-secondary institutions gives relevance to a study on cognitive development and adult learning theory. Her study examined the cognitive positioning of adult students during their first year in a two year institution. Adult learners were described, "as persons who enter college following several years of other activities, such as jobs, military, mothering, and are therefore older than the traditional age student" (p. 2).

A professional group of raters for the Perry scheme developed and validated an essay test (protocol) for the study. Fifty students over the age of 22 were tested. In the first sample of 46 individuals there were 29 dualists (63.3%), 12 multiplists (26.0%), and 5 relativists (10.8%). Table 1 indicates a break down by curriculum.

Table 1   Intellectual Development by Curriculum

	Business Curriculum		Liberal Arts and Human Services	
D	(7)	46.6%	(22)	70.9%
M	(6)	40.0%	(6)	19.3%
R	(2)	13.3%	(3)	9.6%

This study supported previous data to suggest that most adults were reported to be at the lower positions

of cognitive development. The age range for the 29
respondents at the dualist stage was 22-50 years, which
Cameron claims disputes a positive correlation between
cognitive development and age. According to Cameron
several assumptions about these adult learners can be
made. We can expect them to be highly dependent on the
instructor, to have an external orientation, to possess
a high need for approval, to be less aware of their own
learning needs. Further she states, "students who are
dualists will not be capable of self-directed learning,
even though they can be encouraged to be more and more
self-directed" (p. 9). Cameron speculates that many of
these adult learners would benefit from a
support/challenge ratio which would possibly assist in
their cognitive development towards a higher
positioning.

In her study, Leeb (1983) examined the
relationship between health conducive lifestyles and
self-directed learning. She used essay protocols to
assess the Perry scheme and to establish how adults
reason about their health and health goals. Although
it was not of central importance to her thesis, Leeb
did examine the relationship between Perry positioning
and results on the Self-Directed Learning Readiness
Scale. She found no statistically significant rela-
tionship. However, she did note that her findings were

speculative as the study she conducted was not designed
as a correlational study.

Much of the literature regarding the relationship
between self-directed learning and intellectual
development is speculative at this point. Not enough
research has been conducted to draw adequate conclu-
sions. This void in the research is a significant
reason for this study.

Summary

Cognitive developmental theory suggests that
individuals reason about and react to their environment
throughout their lives. This reaction can be a dog-
matic denial of any other perspective, or it can be a
reaction to the dissonance caused by examining the
potential for a different perspective. Growth is
characterized as a sequential process of moving towards
a broader perspective. Perry suggests that growth
includes changing one's view of authorities, peers, and
truth. The MER measures respondent's views of the
learner, the instuctor, peers, decision making pro-
cesses, evaluation, and truth/knowledge. These six
categories relate well to examining the differences
between a self-directed learner and an other-directed
learner. Therefore, an examination of self-directed
learners in a cognitive developmental framework can

provide valuable information for educators. As Kasworm
suggests, the instructor could use such information to
create an environment conducive to promoting
self-directed learning in individuals. Thus far the
research examining the connection between the two
concepts has been very limited. This study adds to
literature base uniting the concepts. An underlying
presumption of this study, at the onset, was that as
persons achieve a higher level of intellectual
reasoning they become more self-directed in their
learning. Although Kasworm, Cameron, and Leeb have
provided some information regarding the nature and
importance of the relationship, there is much to learn
about this relationship.

CHAPTER 3

METHODOLOGY

The previous chapter of this research report
outlined some of the more significant literature
regarding intellectual development (as specifically
related to the Perry scheme) and the theories and
research regarding adult education self-directed
learning. A limited selection of literature was also
presented which suggested that a relationship may exist
between self-directed learning and intellectual
development. This chapter will outline the methodology
used to examine this relationship. This research
project was conceptualized, in part, as a response to a
void in this literature base. The problem examined in
this study is the nature of the relationship between a
person's predisposition/preference for self-directed
learning and that person's intellectual development.

Population and Sample

The population from which the sample for this
study was taken is the total undergraduate and graduate
enrollment for Montana State University. A demographic
description of this population is found in a 1984

survey of incoming freshmen (Astin and Groseth, 1984).
This survey echoed, in many respects, the results of
previous surveys taken in 1976 and in 1970. Approxi-
mately 97% of the freshmen population in 1984 described
their race as white/caucasian. This figure is consis-
tent within 1 percentage point of the previous surveys.
The only other race of individuals with a significant
percentage was Native Americans with almost 3% of the
total enrollment (a figure which has also stayed fairly
consistent). Increasingly, a growing number of
attendees at MSU come from homes in which at least one
parent is a college graduate. While in 1970, only
23.9% of entering freshmen claimed that their fathers
had completed a college education, the figure for 1984
was 42%. Another interesting statistic reflects family
income. In 1984, 46.9% came from households with an
annual income in excess of $30,000. From these
statistics we can assume that the population of MSU is
largely white and middle class. Any results of this
survey may only be applicable to other populations
within higher education with similar demographics.

A random stratified sample was taken from the MSU
population. Stratums identified for this study were
based on the university's classification of students as
outlined by the undergraduate catalog (1986-1988).
These classifications are:

Freshman: A student who is entitled to regular or conditional admission with less than 45 credits.

Sophomore: A student must have earned 45 or more credits.

Junior: A student must have earned 90 or more credits.

Senior: A student must have earned 135 or more credits.

Second bachelor's degree candidate: A student seeking a bachelor's degree who has already earned one or more baccalaureate degrees.

Nondegree student: A student with at least a baccalaureate degree but not seeking another degree.

Graduate degree student: A student who has at least a baccalaureate degree and has been accepted into the College of Graduate Studies. (p. 20)

Initially a sample of 100 students from each of the five stratums was drawn randomly by the Registrar's office. One of the major difficulties of this study was contacting the students in the sample. The list from the Registrar's office did not include phone numbers and since phoning the sample was an important part of the data collection it was necessary to obtain phone numbers from other sources. It was possible to obtain phone numbers for approximately 50% of the sample. Another difficulty encountered was that the information contained on the list was inaccurate for at least 10% of the sample. Some individuals listed were no longer students; many had changed residences. Because of these difficulties, it was necessary to draw

a second sample. This second sample included only
those students in the post baccalaureate sample.

Instrumentation and Scoring

The instruments chosen for this study were both
developed within the last four years. However, there
is evidence to indicate that each has appropriate
validity and reliability to contribute solid results to
this study.

The Measure of Epistemological Reflection

The Measure of Epistemological Reflection (MER)
was chosen for this study for several reasons. The
major advantage of this instrument is its format. The
(MER) is a short answer essay with follow-up questions.
There are six domains investigated by the instrument:
decision making; role of the learner; role of the
instructor; role of peers; evaluation; and view of
knowledge, truth, and/or reality. The standardized
format and scoring reduces the degree of inference
necessary to evaluate along the Perry scheme.

Another advantage of this instrument is its ease
of administration and the nature of the responses. The
instrument can be given to the respondent in any
setting. The nature of the questions make it unlikely
that the individual can manipulate his or her response.

According to Taylor (1983), reliability of the MER
was based on the interrater agreement and on internal
consistancy among domain ratings. Interrater agreement
on the individual domains ranged from 42% to 64%;
however, interrater agreement for the total protocol
rating (TPR) ranged from .75 to .84. As was noted
earlier, in order to be certified to rate the MER, an
individual must obtain approximately a .80 correlation
with an expert rater on a collection of sample proto-
cols. Internal consistency among domains for the
initial sample (79 men and 76 women) was found to be
.76. Concurrent validity of the MER was established to
be quite low when compared with another similar
instrument - The Measure of Intellectual Development.
Correlation of scores from both instruments ranged from
.04 to .11. A difference in the variability of
reported scores may account, in part, for the low
correlations. The MER is designed to obtain more
informtion and assigns a more specific position rating
than does the MID.

Scoring the instrument is accomplished by
comparing the individual's responses to the instrument
with the reasoning structures outlined in the scoring
manual. A score reflecting the Perry positioning and a
reasoning structure as outlined by the manual is
assigned to each domain rating; the dominant rating is

assessed. Any additional rating which occurs twice is
shown in parenthesis [example, 2(3)]. If the ratings
are evenly split between two ratings the TPR is shown
with a dash (example, 2-3). A rating which occurs only
once is not reflected in the TPR. The TPR reflects a
person's positioning along the Perry scheme. The Perry
positioning assigned to a person reflects the way that
person reasons about his or her world. For research
purposes the total protocol rating can be converted
into a continuous variable. This was done in order to
complete the statistical analysis of this study.

The Oddi Continuing Learning Inventory

The Oddi Continuing Learning Inventory (OCLI) was
chosen to evaluate self-directed learning. The instru-
ment was chosen for a number of reasons. First, the
instrument is easy to administer; like the MER, the
OCLI can be administered in almost any setting.
Instructions for completing the instrument are fairly
straightforward and easy to follow. Second, it is
relatively inexpensive to use. A licensing agreement
with the author allows a researcher to use the
instrument without royalty. Finally, the OCLI examines
self-directed learning as a personality construct which
is how the concept is operationalized for this study.
The OCLI is a 24 item Likert scale. Each item consists
of a statement to which the respondent is asked to

react. The scale ranges from a "1" which reflects that the person strongly disagrees with the statement to a "7" which reflects strong agreement with the statement. There are five reverse items on the scale which guard against "out-guessing" the instrument.

The OCLI measures factors on three continuums: Cognitive openness versus defensiveness; proactive drive versus reactive drive; and, commitment to learning versus apathy or aversion to learning. External validity for the OCLI was determined by comparing these different factors measured by the instrument with other instruments which measure the same factors. Commitment to Learning vs. Apathy or Aversion to Learning (CL/AAL) was validated against the Leisure Activity Survey (r = .363) and against the Affliation subscale of the the Adjective Check List (r =.265). The Internal-External Scale was measured against the Cognitive Openness vs. Defensiveness (CO/D) factor (r= -0.40); and against the Change subscale of the Adjective Check List (r = -.020). The Proactive Drive vs. Reactive Drive (PD/RD) factor was correlated with two sub-scales of the Adjective Check List. The Self-Confidence subscale correlated with an r = .551; the Endurance subscale correlated with an r = .539. Oddi (1985) suggests that the instrument is a valid instrument when considered in its entirety, but raises