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AN EXPLORATION OF OPENNESS TO LEARNING AND THE DEVELOPMENT OF A MEASUREMENT INSTRUMENT

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ABSTRACT

AN EXPLORATION OF OPENNESS TO LEARNING AND THE DEVELOPMENT OF A MEASUREMENT INSTRUMENT

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The process of opening oneself up to learning and incorporating new experiences into one's life is a very individual and almost intimate one. This research was designed to better understand the process of openness to learning in individuals and to establish a method through which the topic of one's receptivity to learning could be measured and discussed.

The central focus of the study was the development of an affective self-report instrument that could be used to measure five constructs contributing to one's openness to learning.

This was a methodological study that involved close adherence to the methods of affective instrument development. An extensive literature review, input from a panel of experts, interviews, and an item analysis formed the basis for instrument development. The results of the research provided a preliminary instrument that has gone through the initial steps of validation. The instrument provides confirmation that the concept of openness to learning can be measured. It establishes and validates five constructs that have a significant effect on one's openness to learning.

This study also established that the concept of openness to learning is one that is very familiar and important to learners and educators. However, it is a concept that is not often recognized and used.

The instrument provided insights into the respondents as learners and provided respondents with insights into themselves as learners. Measurements of one's openness to learning can be used as part of a proactive approach to dealing with the threat of learning and change. Being open to learn creates feelings of positive self-esteem and enthusiasm for still more learning.

The instrument itself will be further developed as an educational tool for use as a means of understanding one's openness to learning and the constructs that may contribute to that learning.

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CHAPTER I

INTRODUCTION

The process of opening oneself up to learning and incorporating new experiences into one's life is a very individual and almost intimate one. Authors have talked about learning theories, learning styles, the characteristics of learners, and methods for promoting learning, but few have addressed the more intimate topic of the personal choice that is made by the learner as to whether to learn or not. Adult educators have made tremendous contributions to the base of knowledge about the adult as a learner. The bulk of studies, however, have tended to focus on the adult who has articulated an educational need or is displaying self-directed learning behaviors in some way. A great deal of research has also been directed toward the management and training of people. It has included information on how to motivate, how to run effective training programs, how to analyze and develop leadership in others, and how to train the trainer, just to mention a few, but very little attention has been placed on the openness of educators to their own learning processes and to the factors that promote this openness. An educator is, by definition, one who is trained in teaching, a specialist in the theory and practice of education. Specialists in

the theory and practice of education could be assumed to have some insights into their own practices of educating themselves.

Education, by definition, is the knowledge or skill obtained or developed by such a process: learning. It is assumed that these processes of learning and education are intertwined. When one is educating, one is also learning and vice versa. The one control that seems to override these processes is the question of whether one is open to the education or, in turn, open to the learning. This is an individual decision that each person to be educated and each educator makes for himself/herself.

Adult education tells us that learners learn more when they are involved in the process of education. They learn more when they are able to see application for what it is that they are doing. They need a chance to be self-directed and independent. All of these demonstrate decisions that are made by the learners during the process of education. Dogmatism, the characteristic that keeps learners from being involved, was thoroughly researched by Rokeach (1961). Rokeach's study allowed for a look at contrasting characteristics that show openness to these kinds of experiences and self-exploration. But the initial decision, whether to be open to the learning at all, was the focus of this study.

An underlying assumption that exists throughout this study is that the more open people are to their own learning process, the more open they will be to the learning processes of others and therefore will be more effective educators. Those who are concerned with their own learning process are aware of educational decisions

that they are making for themselves. They try things that might improve that process. Many of those skills and awarenesses are gained from watching others. This makes them also aware of how others learn. The reverse is also true. Learners who are not aware of their own learning are probably not aware of the learning that goes on with others. An example might be the person who believes that the content is the most important component of the educational setting. This educator has very little concern for the process.

What, then, is "openness to learning?" Openness, according to Rokeach (1960), is a belief system that is organized so that it allows a person to receive information and act on it without being influenced by irrelevant variables. It is an intrinsic process. The word "learning" is often used interchangeably with the word "change." It is a willingness to internalize information and alter one's knowledge/skills or behaviors based on that information. So openness to learning is having a belief system that allows one to intrinsically change one's behaviors, skills, or knowledge. This process is proactive. It is a check and balance of keeping oneself in congruence with one's environment.

In this study, a person who is open to learn is described as one who is open to his/her own learning and who does not lose sight of his/her own capacity to grow. The person who is "open to learn" approaches personal learning and the learning of others in a proactive, holistic manner. This approach expands the potential for self-awareness in areas beyond those that are apparent. The "open

to learn" person is one who reserves the right to seek options, opportunities, and environments that challenge the thought processes. This person is not afraid of learning and seeks out changes. Rogers (1969) would describe this person as a fully functioning person who is well aware and willing to learn about "self."

Definition of Terms

The five constructs that the literature most closely linked to openness to learn were used in this study to assist in the definition and description of the person who is open to learn. The first construct is **personal growth**. A person who is open to learn is concerned with his/her own personal development, moving him/her toward what Maslow (1970) would describe as self-actualization--a person who is becoming the best that he/she can be. The second construct is **reflective thought**, the continuous, persistent, and careful consideration of one's own belief system. A person who is reflective places a high value on the process that examines beliefs and integrates new information into those beliefs. The third construct used in this study is **problem solving**. Problem solving is a systematic way of being able to define a problem situation, evaluating and generating solutions or alternatives. The person who is open to learn sees problem solving as a proactive approach to life's endless problems. The fourth construct is **knowledge transfer**. The person who is open to learn spends time determining how the information, skills, and knowledge about one topic fit into

other areas. It is an integration of information within self. The last construct used in the study is **listening**. Listening is the ability to become actively involved in a communication with understanding and clarification as the true motive. Listening is an active and important part of being open and learning. One must be a good listener in order to entertain ideas and concepts and, in turn, to internalize them.

The Problem

The problem is that very little study has been done that has directly focused on openness to learning. Learning has been a focus, and openness has been a focus, but not a combination of the two. The first step in the development of a concept such as openness to learning is the thorough research of the total universe of literature in order to find a starting point. Concise and explanatory definitions must be constructed that are congruent with the essential descriptors found in the literature. Also, the familiarity of the concept must be explored. This writer went one step further in an attempt to measure the concept.

Purpose

The purpose of this study was to develop an affective instrument that measures one's openness to learning. The writer first explored the concept of "openness to learning" in an attempt to establish a data base. Second, possible factors were identified that may foster learning openness and measure the receptivity or openness to learning.

The primary objective of this study was to develop an instrument that can be used as an educational tool to measure one's own openness to learning. The secondary objective was to explore and develop an understanding of the concept of openness to learning and the variables that may relate to it.

The development of an instrument will allow educators to talk with learners about the intimate side of the learning process and any possible fears or reluctance that the learner might have, and will help educators stay aware of their own learning variables. It will help uncover variables in the learner's personal openness to learning that might hinder or enhance the learning process. The instrument described is a 35- to 45-item self-report paper-pencil test, with personal growth, reflective thought, problem solving, knowledge transfer, and listening scales.

The concept of one's openness to learning is fundamental to learning and consequently to teaching and training. Perhaps it is a natural initial step to discuss with adult learners as they contemplate their experiences. Perhaps it is a major step toward creating an environment that is a safe place for adults to learn. It may be a proactive way to approach possible glitches in the learning process.

Plan

This study is primarily a methodological study in affective instrument development and closely follows the methodology provided by Gable (1986) in his book Instrument Development in the Affective

Domain. A chronological trail of the theoretical development of the concept of openness to learning and the theoretical and psychometric development of the Openness to Learning Scale is provided. The order sometimes varies from the typical research format because of the nature of this methodological and exploratory study. Chapter II is a review of the literature used in the study. Chapter III follows the item and instrument development of the Openness to Learning Scale. The validation and reliability process used in the psychometric development of the instrument is reported in Chapter IV. Chapter V contains conclusions or implications regarding the concept of openness to learning and the Openness to Learning Scale and recommendations for future research.

Summary

The concept of openness to learning is not one that has had much attention in the fields of education, psychology, or learning theories, yet it seems to be a key determinant of learning in every learning situation. In this study the researcher attempted to develop an instrument that will operationalize the concept of openness to learning in order that it may be further discussed and understood by educators and learners.

CHAPTER II

REVIEW OF RELATED LITERATURE

The review of related literature provides an opportunity to carefully examine the literature that contributed to the construct that is being addressed in this study. The literature review is presented in four major sections. The sections include literature on the adult as a learner, literature on openness, literature on openness to experiences, and literature on the five constructs for this study. The literature progresses from the very broad concepts of the adult as a learner and those that have been developed around openness, to the more specific constructs that are used specifically in this study.

Adults as Learners

Adult education is a relatively young field. Its existence as a worthwhile study began with the work of some of the great educators of the early 1900s. Lindeman (1926) and Dewey (1933) are but two of the educators who began to look seriously at the adult and to begin to gather a theoretical base for the future study of adults as learners. Inquiries into the learning that involved adults, and the characteristics of the people who seemed to become more involved in learning as adults, became focuses of this

theoretical base. As the years have progressed, there has been a mounting recognition of the adult as a learner; as a result, additional effort is being given to the quality of the learning experiences that exist for the adult.

Adult education as we know it today began to take shape in the early 1900s. Up until that point, education had been viewed as a rather simple transfer of knowledge. A certain awareness was aroused in adult educators of that period as they started to take a more in-depth look at adults as learners and the process of adult learning.

Early adult educators, such as Lindeman (1926), began to add dimensions to the development of basic theories that would become the foundation for contemporary adult education. Lindeman (1961) defined adult education as the process through which learners become aware of significant experiences. He pushed forward, as did many of his contemporaries, to try to further understand and to better be able to describe the adult learner. He began with the assumption that man is a social being. Lindeman took a situational approach to adults as learners and thought that people could contribute to social action through individual growth and thus further the development of social intelligence. He described the learning process as a continual procedure of evaluating the situation in which one finds himself/herself and developing ways to change things from what is to what ought to be. The real learning, according to Lindeman, comes when the learner is able to recognize the difference that was made by his/her methods of problem solving. This learning

situation, described by Lindeman, can be translated into three steps: (a) situational analysis, (b) doing something differently, and (c) being aware of the difference that was made in the situation by the learner-produced change. Lindeman's focus on the social situation was central to his theory of adults as learners. He believed that in these situations self-awareness would develop, that the learner would be collaborative, that adult education was a social enterprise, that curriculum for these learners could be developed around social issues, and that small discussion groups were a method that was uniquely suited to the adult learner and the situation.

Dewey (1938), another educator of the period and a contemporary of Lindeman, also saw personal experiences as the focus for adult learning. Dewey's writings reflected his position on the social reform that he thought could be accomplished through schools that taught democratic education. His theory proposed that the most significant growth would come from an education that encouraged learning by doing based on an immediate need and that was developed individually. Dewey also stressed the importance of social context for these learning experiences.

Lindeman's and Dewey's work became an inspiration to Knowles (1970), who popularized the word "andragogy." Knowles defined andragogy as the art and science of helping adults learn. This contemporary theory proposes that learning for adults is a lifelong activity. Knowles described changes that occur in people as their

self-concepts develop with maturity, taking them from the dependent stage of childhood to the independence and self-directedness of adulthood. These learners are in the process of taking responsibility for their own learning, which in turn grants one the freedom and ability to satisfy one's own immediate needs. In this way, learning develops out of one's own desire and the learning is applied in the manner that fits one's unique life concerns. A basic desire to learn can be observed in one's transitions through the life cycle and in one's search for meaning in life itself.

Knowles stands out among adult educators for his development of the concept of andragogy, but also for some more specific contributions concerning learning contracts and emphasis on the importance of the learning climate. The learning contract is a process through which the adult learner is able to develop individual goals for learning and thus transfer this responsibility from the educator to the learner. The learner makes a contract with the educator concerning the learning that will take place.

Knowles contended that the climate or environment that is established by the educator can be directly related to the amount of learning that takes place. The climate must accentuate the positive conditions by creating a place where learners are responded to, where successes are possible, where the learner has choices, where the learner can apply new information to his/her unique situation, and where the learner and educator develop a relationship that is based on respect and mutual goals.

One of the first systematic studies that involved the continuous learner was done by Houle (1963). Through his classic research involving 22 adults continuing their education, Houle was able to classify the learners into three categories: (a) those who were goal oriented and used education to reach specific goals, (b) those who were activity oriented and were drawn by the participation not the content, and (c) those who were learning oriented and sought knowledge for knowledge's sake. Houle's research suggested that the learner's motivation may be related to the learner's orientation to participation. He said that one must remember that the reason adult learners attend continuing education groups, sessions, or classes may be very different from that of the teacher. Statistically, there are more adult learners involved in some kind of group setting than there are people involved in all of the elementary schools combined.

A next major step taken by an adult educator to further identify the adult learner was presented by Tough (1971) as he tried to describe the learning orientation of individual learners. The findings revealed large numbers of adult learners were engaged in a number of major learning projects a year. The dimension Tough added is one that gives further perspective to the adult learner as being self-directed. Tough reported that, of the adults included in his study, the median number of projects in which they were involved was eight. These eight projects were focused on specific subject areas and skills. The time spent on these learning projects was about 700 hours. A minimum of eight hours was used as a measure for

qualifying an activity as a learning project. The learning projects included represented 20% that were planned by professionals and 80% that were planned by an amateur or by the learner himself/herself. The typical motivation for these learning projects was the learner's anticipated application. The learner whom Houle described as learning oriented was less common than the goal-oriented learner. In fact, Tough reported that goal-oriented and learning-oriented people, those who would typically be involved in formal education, comprised only about 5% of all the learning projects. According to Tough, then, adult learners initiate and conduct by themselves the majority of their learning projects.

A self-directed learner is described as one who has decided that a certain knowledge or skill is desired and sets out to plan a strategy, maintain motivation, and do everything necessary to assume success (Tough, 1966). The learning projects were determined to be very important parts of a subject's life and seemed to dominate the learner's time and thoughts for weeks or even months (Tough, 1967).

Tough was also able to determine that self-directed adult learners received an amazing amount of help on their learning project from a large number of individuals. Based on follow-up research, Tough (1979) described the typical learner in his second edition of The Adult's Learning Projects:

> The typical learner conducts five distinct learning projects in one year. He or she learns five distinct areas of knowledge or skill. The person spends an average of 100 hours per learning effort--a total of 500 hours per year. (p. 192)

Tough's studies have shown that institutional adult education serves a mere fraction of the adult learners. The findings give the adult educator not only a more complete description of adults as learners, but also a reason to be very thoughtful concerning their own perceptions of the adult as a learner.

Cross (1981) described the adult as a learner in still another way. The studies done have tried to illuminate those who do not learn and to determine the reason for that nonlearning. Cross claimed that, if adults do not learn, it is for either a situational reason, an institutional reason, or one of disposition. An example of a situational reason might be the costs that are involved, which are perceived as unattainable, an institutional reason might be the time that is required or the red tape that is involved in institutions, and a dispositional reason might be the fears that one has built up in the past about the educational system, which keeps adult learners from redefining their own learning.

Cross identified these categories of problems that exist when educators try to fit the adult learner into the established system of education without consideration being given to their uniqueness. She explained that one way educational institutions can begin to pay attention to these differences is by starting to offer less threatening, low-risk opportunities for the adult learner.

Summary of Adults as Learners

Lindeman and Dewey described the adult learner as a social being who enjoys collaboration as a method of learning. The

collaboration or learning can best take place when organized around a social issue. The experiences that are produced will help to raise self-awareness and, in turn, will raise social awareness. Knowles added to the description of this adult learner by determining that the learning is best internalized when the knowledge or skill can be applied to the learner's unique set of concerns. He thought that the process is more complete when a climate of educator/learner respect and relationship is developed.

Houle believed that this adult learner may learn for learning's sake, to be a participant, or to attain a specific goal. The adult learner arrives at each learning setting with a unique set of reasons for that learning. To this unique set of reasons for learning Tough added the dimension of self-directedness. Adults are not dependent on institutions for their learning experiences, and 80% of their learning does not include a formal setting. Adult learners have unique ways of networking in order to complete their learning projects and can find extraordinary amounts of help. There are many reasons why adults do not learn or do not become self-directed, and Cross described some of those barriers. Organizations, institutions, and adult educators can help to lessen some of the fear that characterizes many adult learners by being more sensitive to their uniqueness, by lowering the risks, and by providing opportunities that reduce the institutional, dispositional, and situational barriers for adult learners.

Openness

The foundation of the literature that develops the concept of "openness" was written by Rokeach in the 1960s. The work of Rokeach has been the backbone of many subsequent studies and continues to be. Rokeach developed a theory that was centered on the nature of a person's belief system. The early stages of the study led Rokeach to define the phenomenon of dogmatism, which became the basis for further studies that centered on a person's open or closed belief system. Another early distinction that was made was that Rokeach would be dealing with the belief system and not the content of that belief system. This is a very important distinction, not only for Rokeach, but also for the present study. Rokeach (1960) wrote:

> A person may adhere to community, existentialism, Freudianism, or the "new conservatism" in a relatively open or in relatively closed manner. Thus, a basic requirement of the concepts to be employed in the description of belief systems must not be tied to any one particular belief system; they must be constructed to apply equally to all belief systems.
>
> The ax we frankly grind is simply this: It is not so much <u>what</u> you believe that counts, but <u>how</u> you believe. (p. 6)

According to the theory, all people have a multitude of beliefs concerning everything from God to beliefs about the future. It is the way in which each individual organizes this belief system that allows predictions to be made about behavior. The term "system" implies that there is some kind of logic involved with the way that the beliefs are organized. Rokeach would say that there are two sides to this system, a belief system and a disbelief system, and that each has a series of subsystems. The division allows for the explanation of logical and psychological systems. People have a

certain portion of their belief systems that follows a logical progression, whether they are on the belief or the disbelief side, and they also have a portion of their belief systems that do not follow a logical pattern. These less logical patterns are referred to as the psychological side of the system:

> We propose that logical systems, considered as human products, are but a subclass, a special kind of psychological system. In logical systems the parts are interrelated or in communications with each other according to the rules of logic. In psychological systems the parts may be interrelated without necessarily being logically interrelated. In fact, what may be of interest to the psychologist is that the parts are isolated or segregated from each other. It is precisely this isolation or segregation of parts which describes their relationship and makes possible certain predictions about behavior. (Rokeach, 1960, p. 33)

Starting from a position of intuition, Rokeach began to informally observe people who displayed characteristics that would distinguish them as persons having closed or open belief systems. The characteristics that were observed were used to formulate a definition that exposes the extent to which a subject's belief system is open. The openness of a belief system is measured in terms of:

> . . . the extent to which the person can receive, evaluate, and act on relevant information received from the outside on its own intrinsic merits, unencumbered by irrelevant factors in the situation arising from within the person or from the outside. (Rokeach, 1960, p. 57)

Using the data that had been collected, Rokeach developed the Dogmatism Scale, which became the basis for many future studies. It has been extensively used as a measure of the openness or closedness of one's belief system. It is a 66-item scale that, using a Likert scale, measures one's reaction to statements that are made. The

topic areas measured are belief-disbelief dimensions; degrees of differentiation of the belief and the disbelief systems; primitive beliefs, which are the beliefs that all people have; authoritarianism; and time perspectives of the past, present, and future. There is also a second scale, called the Opinionation Scale. This scale measures the individual's general intolerance.

Rokeach (1960) defined dogmatism as the variable that determines the individual's receptivity to new ideas and how he/she acts on these ideas. This was fundamental in the development of the Openness to Learning Scale because the receptivity of ideas is basic to learning.

Two dissertations that were based specifically on the Rokeach theory were written by Holmes in 1967 and Kemp in 1957. Holmes attempted to use dogmatism as a predictor of communications behavior as related to the diffusion of consumer innovation. He was unable to show any significant connections between the two.

Kemp's study, entitled "Changes in Patterns of Personal Values in Relation to Open-Closed Belief Systems," used a group of college students to examine the changes in their value systems following graduation and the extent to which dogmatism might influence those changes. Kemp reported that dogmatism develops early in childhood and continues to affect the individual's adjustment to reality. Participants scoring high in dogmatism were unable to easily consider alternatives. The degree of dogmatism affected the

possibility of change in their patterns of values and tended to keep those who had high scores in dogmatism more inclined to conform.

> The members of the median and high groups, in their concern to conform, attempted to actualize themselves through identification with authority figures. By so doing they seriously decreased their opportunities for growth. It can be reasonably assumed that the individual in the Low group was permitted more freedom, was enabled to understand his real feelings, to interact with others and to change his self- concept and reset his level of aspiration.
>
> The contrasting attempts at self-enhancement result in two very different types of individuals, those who rely heavily on conformity, and those who assert their capacities and freedom in their evaluation of cultural forces. (Kemp, 1957, p. 75)

The base that Rokeach developed with his studies on dogmatism has provided a foundation for many additional studies, which have involved dogmatism, as well as many other spinoffs of the theories.

One of the more recent discussions of openness was provided by Hare (1979), who wrote about education and preferred to use the term "open-minded." Hare distinguished between open-mindedness as a trait and open-mindedness as an act. When a person's thinking is open-minded it is predictable in certain situations over time, and a trait of open-mindedness might be ascribed to this person. Hare suggested that it does not mean that the person never acts with a closed mind. Closed-mindedness is generally ascribed to a person as a trait. It seems to be easier to distinguish or label one who is closed-minded. Perhaps the behavior is more consistent for a person who is ascribed the trait of closed-minded. That does not mean that a person with this trait cannot have moments or acts of open-mindedness. Hare described ways in which a person may not be open-minded. He suggested that there are two types, the first of which

is the person who has been indoctrinated and, as a result, is incapable of thinking objectively. The second person who may not be open-minded is one who can recognize an opposing view but is unwilling to consider it. A third category of person, which was identified through interviews, is the individual who is not able to recognize an opposing view. Hare also described open-mindedness as one way of being rational. He wrote:

> Closed-minded is, however, one way of being irrational. We contrast a rational decision, for example, with one that is arbitrary, where the latter does not need the demands of evidence and argument which the former strives to satisfy. (p. 12)
>
> . . . . . .
>
> It would seem then that the trait of open-mindedness qualifies a person's activities in thinking, chiefly his ability and willingness to form and revise his views in the light of evidence and argument. This will be unpacked into a variety of dispositions such as willingness to consider objectives, to subject his own views to critical scrutiny, to seek out objections to his own positions, and so on. (p. 20)

Hare discussed the role that neutrality, lack of content, doubt, commitment, and ignorance play in open-mindedness. He raised some very interesting questions. One example is the question of an open-minded person's being able to be committed to something or not. Does becoming committed automatically take the person "off the list" of being open-minded in that situation or not?

> We cannot tell then from knowledge of a person's beliefs, or from knowledge of his neutrality or non-neutrality, or from evidence of his ignorance or doubts, whether or not he is open-minded. And our knowledge that a person is open-minded does not tell us what his beliefs are or whether or not he is neutral with respect to some issue, though it does tell us that he is at least familiar with that issue he is said to be open-minded about. What ever his particular beliefs, and whether or not he is neutral, and despite his knowledge of a solution or lack of knowledge, the open-minded person is one who is willing to look seriously at new evidence, theories, and arguments, and

> ready to base his beliefs and decisions on the best assessment he can make of these. (Hare, 1979, pp. 43-44)

Almost all of the scales or measurements that have been developed regarding openness have been developed to measure the negative side of openness or the person who is not open rather than to measure openness. The more positive assessments or discussions have leaned more toward the literature dealing with creativity. Parsons, Tittler, and Cook (1984) tried to show a distinct difference between the two traits--openness and creativity. They took the Rokeach Dogmatism Scale (Rokeach, 1960) and the Barrom-Welsh Art Scale (Welsh, 1959) and compared the scores along with some individual assessment. This multi-trait, multi-method approach that was used was a way of measuring more than one trait, openness or creativity, by more than one method. This method was chosen to attempt to clarify the contribution of both traits and the methods of testing. What Parsons et al. found was that they were unable to support the view that creativity and openness can be distinguished from one another and brought forth a concern that the distinctions that are made might be artificial. Also, significant correlations were produced, which pointed to the major significance of methods employed rather than to the traits themselves.

> Perhaps creativity involves being able to think openly about many divergent possibilities as well as being able to focus these ideas into an integrated product. A typology which includes cognitive processes such as information evaluation and divergent production is suggested in these findings. (Parsons et al., 1984, p. 403)

Parsons et al.'s study did not support a simple linear relationship between openness and creativity. Both concepts appear

to take many distinct forms. Psychoanalytic ego psychology (Kris, 1952) involves the measurement of ego and would distinguish creativity as the ability to display both high and low levels of openness. Both traits have been seen by many personality researchers as dimensions of personality. The closeness of creativity and openness is acknowledged in this study, but the terms are not used as one and the same. Openness may well be, as eluded to in studies of the personality and ego, almost a requisite to creativity. In other words, they may go hand in hand.

Openness to Experience

Kris (1952) introduced concepts of "regression in the service of ego," attempting to account for fantasy, artistic creativity, wit, and humor. He explained two phases of regression in the service to ego: an inspirational phase and an elaborational phase. The theories that Kris proposed could be very closely related to the creative process--in other words, an incubation time and a process by which the thought is put into action (Jones, 1972). Few studies were undertaken to follow up Kris's research until Fitzgerald (1966) decided to make some modification of the Kris study. Fitzgerald speculated that there was confusion between the concept of regression in the service of ego and that researchers were trying to relate the concept too closely to aspects of creativity.

Fitzgerald (1966) proposed a modification by employing Schachtel's (1954) concept of "openness to experience." He explained the concept as follows:

> There is a loosening of fixed anticipation and sets so that one approaches the objects of his experience in different ways, from different angles. This is facilitated, he believes, when the individual is not bound by rigorous rules or by conventional schemata of memory, perception, or thought. The person who is truly open to experience does not regress to primitive modes of thought and behavior, he progresses and encounters experience with all its possibilities and subtle nuances. (p. 656)

Fitzgerald took advantage of the freedom that Schactel gave the empirical investigators by deemphasizing the role of instinctual drive. Fitzgerald developed a new paper-and-pencil test entitled the Experience Inventory. The new test measured ego strength and the ability to shift from regulated to less regulated thinking without undue anxiety. The final study produced a test that continues to be used and was determined to be internally consistent and sensitive over a broad range.

> The preliminary sketch of the person open to experience would show an individual with a relative lack of repressive tendencies, who is neither more nor less anxious than his peers and who does not differ from them in ego strength. He is spontaneously original with the ability to shift from more to less regulated thinking with facility and yet maintain control. In broad outline this sketch provided a close fit with theory. (Fitzgerald, 1966, p. 655)

Wilson and Patterson (1968) devised the Conservative Scale, which defined the extremely conservative person. This person was described as being very fundamental in religious beliefs and extremely conservative in art, clothing, and tolerance. There was a suspicion about the unknown or unfamiliar. Wilson later in 1973 hypothesized that this conservative attitude reflected a fear of the unknown and that coping with this fear may lead people to limit

their own experiences to ones with which they are familiar and comfortable.

Joe, Jones, and Ryder (1977) reported on two studies that they based on the earlier Conservative Scale. They attempted to show the relationship between conservatism and openness by assuming that highly conservative volunteer students would be less willing to expose themselves to determined experiments. The first study supported Wilson's (1973) reports that conservatives would limit experiences to ones with which they are open and that this is the method of coping with the threat of complexity, novelty, and the loss of control of one's own feelings and desires. The second study also supported the notion that conservatives limit their experiences as a means of controlling their fears. The conservative students were less willing to volunteer for the experiments deemed as requiring more openness.

McCrae and Costa (1980) are two of the more recent researchers in the field of openness to experience. In a 1980 study they were able to significantly relate ego levels to seven of ten measures of openness to experience. The related openness to experience measures were aesthetics, action, ideas, values, liberal thinking, and traditional family ideology. The unrelated measures were fantasy, feelings, and imagination.

The Trait model of personality identifies the three domains of neuroticism, extraversion, and openness (NEO) (Costa & McCrae, 1978, 1980). The NEO is a conceptual classification of personality traits. It was based on the factor analysis of a number of self-

report personality measures. It is the "openness to experience" domain that is less recognized as a broad dimension of personality. It refers to "a willingness to take in different facets of experience and should be distinguished from interpersonal openness, the willingness to express or disclose parts of oneself" (Costa & McCrae, 1980, p. 1180).

The openness domain is conceptually and statistically independent of the other two domains. Ego level is the broader, more encompassing trait. The attributes that describe a high-ego-level functioning are very similar to those that describe open individuals. They are characterized as communicators, tolerant, high tolerance for ambiguity, conceptually complex, and have differential feelings--in other words, many traits that indicate high sociability.

The McCrae and Costa model was based on perhaps the best-known ego-development theory. It is a theory that was written by Loevinger (1966). This theory is recognized among developmental theorists who believe that adult personality types correspond to developmental stages. The McCrae and Costa (1980) study used a group of 40 men selected randomly from a total population of 220. The purpose was to demonstrate that openness could be expressed in spontaneous verbal responses. They found that it was easier to find clear openness than closedness. The closed men tended to give simple, brief responses. They were unreflective and tended to be rule-bound. Open men were more flexible, playful, and more in touch

with their feelings. The researchers concluded that ego level and openness are not the same, that ego is broader, but that openness increases with ego level, as do some other factors. Dispositional models allow investigators to look at some of the major dimensions of personality on which individuals differ.

> Conversely, complex developmental typologies can benefit from a closer examination of the role of component traits and abilities. Hogan et al. (1978) has begun to identify personality traits underlying moral development, and the present data suggest that openness may be a factor in ego development by providing a richer source of experiential aliment for psychological growth. (McCrae & Costa, 1980, p. 1188)

George and Tittler (1984) used the Experience Inventory and half of the Barron-Welsh Art Scale with 30 college women to see if there was a relationship between openness and mental health. They were not able to show a relationship with this population, and they suggested replication and also a more diverse population.

Whitborne (1986) used the openness to experience trait to predict adult flexibility and life change in adults. Here the goal was to shed light on some of the patterns of life events that occur in adulthood. The personality trait, openness to experience, seemed to be a potential predictor for adults who seek out life changes without anxiety. McCrae and Costa (1980) had seen a relationship between major life events and openness to experience. The flexibility regarding these life changes was also thought to be an expression of the personality trait, openness to experience.

Whitbourne's (1986) study took place over a one-year period with 57 adult participants between the ages of 24 and 61.

Whitbourne found that age was the most powerful predictor of flexibility and that openness to experience was closely related and in two cases outweighed age. Years of education was the only significant predictor of life changes. The significant role that education played suggests that education may allow for options and tends to make the age significance less important. Occupational changes were seen as positive because they tended to be voluntary when connected with increased education. Education may be seen as a facilitator of positive life changes and may indicate education is a resource for adaptation to change and making desired life changes. Whitbourne reported that it is more likely that education affects openness than that it is a consequence of openness. Age seemed to be a significant constraint to thinking about alternatives, but it did not block the actual ability to change. McCrae and Costa (1980) did not use education, and Whitbourne challenged their findings by asking if education might be an even stronger predictor of life changes than is openness to experience.

Tesch and Cameron (1987) stated that existing evidence continues to support Erikson's (1959) theory that "identity formation neither begins nor ends with adolescence." Erikson wanted to examine age trends in identity development and whether openness would be positively correlated with present and a post-exploration of identity alternatives and negatively correlated to identity commitment.

> The relationship between openness to experience and identity formation observed in the present study supports Roger's (1961) theory regarding the importance of openness for positive

> personality growth. In addition, these results may help to unify some seemingly unrelated findings in the literature on ego identity. In composite sketches of each identity status, Donovan (1975) described the moratorium status as energetic, curious and restless, whereas the foreclosure status was lacking curiosity and self-awareness. Somewhat similarly, Read et al. (1984) reported that of all identity statuses, foreclosure was the least analytical and philosophical. As discussed earlier, openness to experience may lead to both exploration of alternative identities and to introspective and expressive behaviors, thus creating indirect associations between identity formation and various behavioral manifestations of openness to experience. (Tesch & Cameron, 1987, p. 627)

Constructs That Affect Openness to Learning

Thus far, the literature review has dealt with the more general theme of adults as learners and openness in the broad sense. It has looked at the collection of literature that speaks to openness as it relates to experiences.

This section of the chapter reviews the literature as it pertains to each of the constructs specifically related to this study. These constructs have been discussed throughout the previous sections as a part of the existing literature but were not singled out until now. Personal growth, reflective thought, problem solving, listening, and the transference of previous knowledge are discussed in the following paragraphs.

Personal Growth

Rogers (1969) described two kinds of learning, which he placed on a continuum. One end of the scale supports learning that involves no meaning. Memorizing symbols without reason is an example of this kind of learning. This is the kind of learning that involves only the mind. At the other end of the continuum Rogers

placed significant learning with profound personal meaning. This learning involves the "whole person." "It has quality of personal involvement in the whole person on both his feelings and cognitive aspects of being in the learning event" (Rogers, 1969, p. 5). Rogers went on to say that this learning experience is self-initiated, pervasive, and learner evaluated; the essence is meaning, and through meaning comes personal development.

In her book Pathfinders, Sheehey (1981) reported her research findings from a study in which she identified some of the personality characteristics of people who were able to successfully negotiate the normal predictable crises that one encounters throughout life. Sheehey's hypothesis was that some people are better able to make this journey than others. She used a population of more than 2,000 participants of surveys and personal interviews. One of the findings was that successful young men demanded more time for "personal growth" than did some of the other subjects. They tended to dream of a balanced life in which personal growth played a significant part. Sheehey found that a great deal of personal growth had to do with the discovery that one could not count on contracts with society and that personal development was just that, personal. A person who has a healthy attitude, or as Sheehey would say is of well-being, is open to learn about the "self." Maslow would describe this person as one who is moving up within his pyramid toward self-actualization. Rogers (1969) would call this individual a "fully functioning person":

> It appears that the person who emerges from a theoretically optimal experience of personal growth, whether through client-centered therapy or some other experience of learning and development, is then a fully functioning person. He is able to live fully in and with each and all of his feelings and reactions. He is making use of all his organic equipment to sense, as accurately as possible, the existential situations within and without. He is using all of the data his nervous system can thus supply, using it in awareness, but recognizing that his total organism may be, and often is, wiser than his awareness. He is able to permit his total multitude of possibilities, that behavior which in this moment of time will be most generally and genuinely satisfying. He is able to trust his organism in this functioning, not because it is infallible, but because he can be fully open to the consequences of each of his actions and correct them if they prove to be less than satisfying. (p. 288)

Authors have seemed to agree that personal growth requires a certain amount of openness to allow the process to take place.

> To me, it seems possible that the looseness, openness, of the person who is undergoing marked personal growth may be seen, in terms of population norms, as deviating from those norms, as "not normal." But these same qualities may indicate that all personal growth is marked by a certain degree of disorganization followed by reorganization. (Rogers, 1969, p. 290)

This openness to disorder that permits the personal growth process to take place within the individual is being open to learning things about oneself that may at times be painful (Rogers, 1969).

Reflective Thought

Reflective thought and reflection are words that recur throughout the literature pertaining to learning and the thinking processes. Dewey (1933) described reflective thought as a chain. It is not just a random series of thoughts, but a sequence of thoughts, plus a consequence. It is an ordering of thoughts that leads to a conclusion. Reflective thought is further described as

"active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusion to which it tends constitutes reflective thought" (Dewey, 1933, p. 9). Reflective thought implies that there is something believed and that there is inquiry into those beliefs.

Locke described in detail how belief can go wrong when reflective thought is not employed:

> 1. The first is of those who seldom reason at all, but do and think according to the example of others, whether parents, neighbors, ministers, or who else they are pleased to make choice of to have an implicit faith in, for the saving of themselves the pains and troubles of thinking and examining for themselves.
>
> 2. This kind is of those who put passion in the place of reason, and being resolved that shall govern their actions and arguments, neither use their own, nor hearken to other people's reason any farther than it suits their humor, interest, or party.
>
> 3. The third sort is of those who readily and sincerely follow reason, but for want of having that which one may call large, sound, roundabout sense, have not a full view of all that relates to the question. . . . They converse but one sort of men, they read but one sort of books, they will not come in the hearing but of one sort of notion. . . . They have a pretty traffic with known correspondents in some little creek . . . but will not venture out into the great ocean of knowledge. [Men of originally equal natural parts may finally arrive at very different stores of knowledge and truth] when all the odds between them have been the different scope that has been given to their understandings to range in, for the gathering up on information and furnishing their heads with ideas and notions and observation, whereon to employ their mind. (p. 3)

Dewey (1933) suggested that there are some values connected with reflective thought. The first two are rather practical in that they allow us to keep from repeating mistakes by making notes or by

constructing sign posts that warn us in subsequent experiences. And reflective thought also allows one to have a clearer picture of what one is about when one acts. In other words, one can be proactive rather than reactive. These two values of reflective thought lend some kind of control through reflective thought. The third value is one of enrichment. It allows for the thoughts to connect with other thoughts and dreams to expand the possibilities.

The attitude that is displayed toward reflective thought "may be defined as freedom from prejudice, partisanship, and such other habits as close the mind and make it unwilling to consider new problems and entertain new ideas" (Dewey, 1933, p. 30).

Dewey's contemporaries began to uncover the power of reflective thought. In the 1966 study done by Fitzgerald involving the spontaneous openness expressed by men, one of the conclusions that was implied was that the relationship between closedness and authoritarian families may result from the unreflective stance that was revealed through a defense of traditional values.

More recently, Schon has attracted much education with his books The Reflective Practitioner and Educating the Reflective Practitioner. Schon's premise was that one must learn oneself. One cannot be told. He called the teacher the coach and set up a situation in which both the coach and the student are learners and role models. Schon (1987) wrote:

> The paradox of learning a really new competence is this: that a student cannot at first understand what he needs to learn, and learn it only by educating himself, and can educate himself only by beginning to do what he does not understand yet. (p. 93)

Schon agreed with Rogers (1969) that teaching needs to be reframed to give central importance to the teacher's role as a learner. Through this reframing the teacher/coach can discover himself/herself through others, model as a learner, be open in expression, and refuse to become defensive.

Schon (1987) believed through this approach that reflective thought can accompany knowledge. Learners can be helped to feel, visualize, and intuit the things they have no feel for and do not yet understand:

> It has to be a kind of contract between the two. The teacher must be open to challenge and must be able to defend his position. The student, in turn, must be willing to suspend his disbelief, to give the teacher's suggestions a chance--to try the suggestion out. The student must be willing to trust that the faculty member has a programmatic intention which will be preempted to ruined by his requiring full justification and explanation before anything is done. . . . A good student is capable of the willing suspension of disbelief. (p. 94)

Schon, Rogers, and Dewey all believed that there is great power and enrichment in reflective thought and that one's ability to use reflective thought is a construct in learning and teaching. As Dewey (1933) stated, reflective thought allows the learner to go beyond or diverge from the ordinary:

> We all acknowledge, in words at least, that ability to think is highly important; it is regarded as the distinguishing power that marks man off from the lower animals. But since our ordinary notions of how and why thinking is important are vague, it is worth while to state explicitly the values possessed by reflective thought. In the first place, it emancipates us from merely impulsive and merely routine activity. Put in positive terms, thinking enables us to direct our activities with foresight and to plan according to ends-in-view, or purposes of which we are aware. It enables us to act in deliberate and intentional fashion to attain future objects or to come into command of what is now distant and lacking. (p. 17)

Problem Solving

It was a Gestalt approach that first saw the whole as being greater than the sum of its parts. A global school of study developed, which pushed toward the understanding of cognition. The study of problem solving was a natural offshoot of this school. Problem solving has remained through the years as a recognized phenomenon that educators continue to try to explain and describe.

Educators as far back as Dewey put problem solving into five steps. Dewey first thought that there had to be a sense of difficulty, and then the problem had to be defined in context with oneself. The third step was to suggest solutions and the fourth to consider the consequences. The last step in Dewey's problem-solving model was accepting the solution that had been decided upon (Frankel, 1983).

In studies of the closed- and open-minded person, Rokeach (1960) wanted to determine if there was a significant difference in the problem-solving ability of the two groups. He was able to divide the problem-solving process into two phases: the analytic phase and the synthesis phase. Rokeach determined that a person might encounter difficulty in the problem-solving process in either or both of the phases because of the attitude that one displayed toward the old belief system that one possessed, the attitude toward looking at new beliefs, and the ability to synthesize the two into new beliefs that would solve problems.

The general hypothesis was that the more closed a person's belief system, as measured by the Dogmatism Scale, the more reluctant one would be to form new belief systems. Rokeach was able to show that subjects were relatively equal in their ability to analyze, but that open-minded subjects were much more adept at synthesis. He further reported that closed persons had greater difficulty remembering the beliefs that were to be integrated. As a result, they were much slower at the process. Rokeach reminded the reader that his theory was that of a threat that is posed to the belief system of the closed person and that it is not a difference in intelligence.

Through his studies, Rokeach distinguished problem solving as a construct between open- and closed-minded people. He said that there are two reasons for using problem solving: (a) past experiences determine if a problem poses psychologically "new" systems to the person, and (b) the basic attitude the person holds toward new systems, as such, will be a factor (Rokeach, 1960). He stated:

> If our analysis is essentially correct, closed persons should generally show less positive transfer than open persons do because the parts within their belief system are more isolated from each other. (p. 230)

Robert Glaser (1984), a recent researcher in the areas of problem solving and thinking, saw Dewey as taking a more philosophical approach and attempting to maintain the focus on mental process. He reminded the reader that Dewey spoke in terms of aims and purposes and was not a scientific psychologist. This is

why much of the study of problem solving has been done in the more scientific arenas.

Wertheimer (1945) described studies that were done in problem solving in the mathematics area. But, over the past 15 years, certain school programs have been designed to encourage thinking, problem solving, and abilities for learning (Glaser, 1984).

> The feasibility of a more integrated approach is not increased by studies in developmental psychology and cognitive science in which attention is turned to cognitive processes in the context of the acquisition of structures of knowledge and skill. (Glaser, 1984, p. 97)

Glaser left readers with the challenge of producing a new environment for learning, in which new relationships can be established between the learner and the subject matter. In these environments learners acquire knowledge, but they also become empowered to think and reason.

Transfer of Knowledge

In his book Reinventing the Corporation, Naisbitt (1985) talked about the importance of learning how to learn:

> Whenever one of us lectures, the question that always seems to come up is, "What subject should I study in order to be really prepared for the future?" People half expect a high-tech answer like "computer programming" or "fiber optics"! But we answer with a very old fashioned idea:
>
> In a world that is constantly changing, there is no one subject or set of subjects that will serve you for the foreseeable future, let alone for the rest of your life. The most important skill to acquire now is learning how to learn.
>
> If you know how to learn, you can adapt and change no matter what technological, social, or economic permutations occur. (p. 133)

Naisbitt believed that learning requires openness and curiosity. His answer reveals a paradigm shift from the

subject-matter expert to the flexible open learner who is curious and has some humility. This shift has spurred on some research that has revealed some inherent difficulties in making this shift from expert to open learner. There are several different strands of research that are looking at the effect of prior knowledge. The theory that predominates the field is called the Schemata Theory. The schemata are defined as highly organized structures that store one's conceptualizations of persons, objects, events, and actions, as well as sequences (Minsky, 1975; Rumelhart, 1980). Schemata are important to the field of psychology because they allow for an explanation of the method of storage of prior knowledge, and give a starting point to try to explain why prior knowledge is important. The strands of research that support the Schemata Theory have been done with both adults and children, and in both groups evidence has been consistent. Results have shown that prior knowledge affects new knowledge because it indicates the necessity of a meaningful relationship between old and new knowledge before learning can occur (Rembold, 1986). Rembold took the study one step further to look at the expert, one who has a great deal of knowledge in one domain. Although there has not been a great deal of study done in the area of experts, the studies that do exist have been consistent in showing that experts (adults and children) can recall up to three times as much as the novice in the expert domain:

> The studies also indicate that having expert knowledge in one domain may not only aid in the retention of new-domains related information, but may also increase the number and quality of

> available options for acting upon that material. (Rembold, 1986, p. 9)

Glaser (1984) explained, from studies done on experts, that the experts are able to organize their knowledge around principles and abstractions, whereas novices will organize knowledge around the objects that are given to them. This makes the expert able to look at the problem from a much broader context, which is dependent on prior knowledge.

The important part of this question, whether adult experts can transfer knowledge easily from one domain to another, was studied by Grick and Holyoak (1980) and provided the following startling results:

> . . . adults will transfer an appropriate solution from one applicable situation to another when they are provided with a hint to do so, but that transfer frequency drops markedly when only spontaneous generalization is considered. (Rembold, 1986, p. 10)

The problem then becomes how to create more meaningful links into prior knowledge and to help adult learners become aware of transfers of knowledge and how to operationalize these transfers.

> The strong assumption, then, is that problem solving, comprehension, and learning are based on knowledge, and that people continually try to understand and think about new information in terms of what they already know. If this is indeed the case, then it seems best to teach such skills as solving problems and correcting errors of understanding in terms of knowledge domains with which individuals are familiar. Abilities to make inferences and to generate new information can be fostered by insuring maximum contact with prior knowledge that can be restructured and further developed. (Glaser, 1984, p. 100)

If one who is open is willing to entertain ideas (Dewey, 1933), it stands to reason that those ideas cannot all come from the same

domain. If the ideas do all come from the same domain, is the person truly open to ideas or just to selected ideas? The Grick and Holyoak (1980) study showed that the transference of knowledge from one domain to another may be a problem for adults, but it does give a hint to the method of making this transference more possible by making the new information more connected to the prior knowledge.

Listening

> A good listener is not only popular everywhere but, after a while he knows something.
>
> --Wilson Mizner

> If you're talking you aren't learning.
>
> --Lyndon Johnson

> If you love to listen, you will gain knowledge and if you incline your ear, you will become wise.
>
> --Sirach

> Listening to others and ourselves is the first step toward improving our relationships with others. Listening actively is the way to learn and remember as well.
>
> --Robert Montgomery

Throughout history, listening has been alluded to as being an important part of learning. Very little emphasis has been placed on the development of listening skills until recently. During the late 1970s, the Sperry Corporation brought attention to listening through their ad campaign, which said the company "understands how important it is to listen" (Brownell, 1986). As a result, the population has become more aware of listening and its importance. In 1979 the International Listening Association was founded for the promotion of the teaching and studying of listening.

Listening is as important as being able to speak effectively (Robinson, 1979). If one is a sensitive listener, one listens with an understanding attitude and is aware that one listens with one's own experiences. A true listener realizes that there is much more involved than hearing the words that are said and is able to observe, pay attention, and hold judgment (Robinson, 1979). Robinson went on to explain how a good listener is able to listen for concepts and ideas and ask for clarification. Listening is a major way of opening communication. Robinson believed that one of the freedoms of communication is the "freedom to see and hear what is here instead of what should be, was, or will be" (p. 51).

Strengel (1982) explained that listening skills, such as being able to be active and use I-messages, put people on the same side of the problem. Good listening helps people to clarify their own point of view and to encourage harmony in interactions.

Montgomery (1981) said that being a good listener is a matter of concentration. He believed the connection between listening and learning is on giving one's full attention. Montgomery believed that the retention of what is learned increases markedly when people improve their ability to be active listeners. He also believed that the reason people do not listen is that their "ego" gets in the way. People are too busy formulating their own speeches to have time to listen.

A part of being open is being able to entertain ideas (Dewey, 1933). Montgomery stated that "the single biggest cause of poor listening is the failure to concentrate on the other person's point

of view or ideas" (p. 8). Dewey said that open-mindedness contains an active desire to listen to more than one idea or side, to pay close attention to facts from whatever their source, to give full attention to all the possibilities, and to be able to recognize the possibility of error even if it is within one's own belief system. The person, then, who is open to learn must be open to listen to ideas, concepts, and thoughts that come from other people or from sources other than self.

Summary

This chapter has related the findings in the review of the literature that became the foundation for this study. Within the review of the literature on the adult as a learner, openness, and openness to experiences, it was possible to find a strong thread that identified many of the characteristics of a person who is open to learn. Through this review the constructs that were used in the study were identified, and a literature review was conducted on each of the five constructs. These constructs represent the characteristics found in a wide variety of literature, which were consistently used to describe a person who is open to learn.

CHAPTER III

METHODOLOGY

This research involved the development of a self-assessment instrument for examining one's own openness to learning. Because of this instrument development, Chapter III does not follow the typical method of reporting. This chapter presents some background information concerning the self-assessment instrument and affective instrument construction. It places the research steps of the instrument development in chronological order and, by so doing, clarifies the methodology used in the study.

Some basic principles were consistently adhered to as the instrument development progressed. This instrument falls into the affective domain because it is not about the business of identifying the cognitive knowledge of the participant, but it is designed to measure the feelings and attitudes that one has toward openness to learning. As a result, affective theories of instrument development were followed. To assess these affective characteristics, it is necessary to construct "instruments that are both theoretically based and psychometrically sound" (Gable, 1986, p. 3).

Anderson (1981) described human characteristics as reflecting typical ways of thinking, acting, and feeling. It is these characteristics that constitute the affective domain.

Guttman (cited in Gable, 1986) said that the concept of attitudes implies consistency in responses. Aiken (cited in Gable, 1986) combined several definitions to state that:

> . . . attitudes may be conceptualized as learned predisposition to respond positively or negatively to certain objects, situations, concepts, or persons. As such, they possess cognitive (beliefs or knowledge), affective (emotional, motivational), and performance (behavior or action tendencies) components. (p. 2)

This chapter provides background, a step-by-step progression of the development of the Openness to Learning Scale, and a description of the development of the two components of an affective instrument. The theoretical development is addressed first, followed by the steps and methods used for the psychometric development.

Self-Report Instrument

Some background on the self-report instrument itself becomes important to assist with a firm understanding of the instrument-development process. Testing has always been used as a way to distinguish one person from another or to take the decision or a judgment out of the hands of one person or a group of persons. Tests are used to make these decisions appear to be more objective. The Chinese used tests as far back in history as 3,000 years ago. People were chosen for government positions on the basis of test scores in what were considered to be very important subjects. It was the development of the civil service exam that brought the testing concept to Great Britain and the United States. It seemed like a fair way to make choices. After this, exams took on three

major areas of development: civil service, school exams, and distinguishing individual differences (Allen, 1979).

Historians have generally agreed that the army testing program "put psychology on the map." The first world war changed the image of testers and the tested. Intelligence tests were no longer things given by college professors and resident examiners, such as Henry H. Goddard, "to crazy people and imbeciles in psychopathic institutes and homes for the feeble-minded, but became legitimate means of making decisions about the aptitudes and achievements of normal people--an essential means of making objective judgments about individuals in a mass society" (Sokal, 1987, p. 76).

The first scale was developed in Paris in 1904 to look at the children considered subnormal within the Paris school system. This was the beginning of the growth of the intelligence tests that were developed by Alfred Binet (1857-1911). This first individual test of differences has had a great influence on testing throughout the world. The effort was started by Sir Francis Galton (1822-1911), who established a laboratory for the measuring of sensory and motor skills. It was a German, William Stern (1871-1938), who developed the first intelligence quotient (IQ) test. The important consideration reflected by the literature is that most of these early tests were developed to be given one-on-one, with the total attention of the tester. It was only later that people were to be looked at in groups and that tests would be developed to be administered in a mass setting.

Measurement theory, as a discipline, began to appear in the 1930s. It was accompanied by the establishment of several journals that had to do with the theory, and it became well established by the 1950s. Even with the advent of the test as a useful and legitimate tool, great controversies continue to surround tests and testing.

> No technology has been more controversial than standardized psychological testing, and all agree that it plays a major role in current American society, particularly with respect to education and employment practices. Its importance has led to well-publicized and often impassioned debates about all of its aspects. Major public figures have, at times, taken a full range of radically overstated positions on the meaning of the tests and their results, and on the testers' goals and assumptions. These extreme perspectives help define the boundaries of the controversy. (Sokal, 1987, p. 1)

Perhaps the extreme controversies coupled with the increased emphasis and growing data bank of knowledge about the adult as a learner have helped promote the recent popularity of the self-report test. Although the constructs surrounding the testing discipline were primarily developed before the 1950s, the self-report tests or inventories are in their infancy. They have most likely developed because of the difficulties surrounding the establishment of what is typical behavior. "Typical behavior" is an elusive concept because behavior in a given situation is not the same on all occasions. If the worker who works at 80% of his ability today would do so tomorrow and every day, it would be easy to describe him.

Typical behavior, however, is an abstraction. It is doubtful if one ever has a truly typical day. Typical behavior could be described as an average or composite of many single behaviors, as

when one judges punctuality by noting the numbers of tardinesses in a month (Cronbach, 1949).

A person's behavior is intertwined with other things that are taking place in the person's life and the interactions that one has with people and situations. Since it is impossible to determine all of the typical behavior of an individual, this kind of instrument relies on the one who has the greatest amount and the most accurate information. That is the person who is being tested. There are two ways, then, to determine a person's typical behavior. The reporter can observe the person over a period of time in the situation where the studied behavior occurs, or the reporter can structure an instrument that will ask the person to report his/her behavior in these situations.

Therefore, self-report devices ask the subject to look back at his/her behavior over time and to report what his/her average behavior might be. One of the obvious problems is that people may answer differently at any given time, or they may not be able to remember what their typical behavior was. A self-report test has to rely on the person's self-awareness and insights into his/her own behavior. A second inherent problem is that of wanting to look good either to the reporter or to oneself. Perhaps the person is not totally honest but is giving back information that is favorable or what is considered to be expected. There are also the difficulties surrounding communications. If the questions have a lot of space for different interpretations among the test takers, the information collected will not prove to be either reliable or valid.

Still another inherent problem with measuring individual differences is the whole concept of working in the affective domain or in attempting to measure "feelings" and the typical ways of "expressing emotions." These measures are generally made through the distinction between attitudes, beliefs, values, and behaviors. Aiken (cited in Gable, 1986) in his article "Attitude Measurement and Research" combined several definitions to state that:

> . . . attitudes may be conceptualized as learned predisposition to respond positively or negatively to certain objects, situations, concepts, or persons. As such, they possess cognitive (beliefs or knowledge), affective (emotional, motivational), and performance (behavior or action tendencies) components. (p. 2)

The Expectancy-Value Model distinguishes belief from attitudes by saying that attitudes represent the individual's favorable or unfavorable evaluation of the target object, while beliefs represent the information the individual has about the object (Ajzen, cited in Gable, 1986). Rokeach (1968) distinguished further by saying that attitudes refer to an organization of several beliefs around a specific objective or situation, whereas a value refers to a simple belief of a very specific kind. Some examples of work values might be independence and economic return, and personal examples might include leadership and conformity (Gordon, 1960).

An important consideration to make in the self-report system is the role that self-concept plays in the report. Self-concept is a core construct in many theories of personality and psychotherapy. It is, therefore, central to the assessment of personality traits. There are two basic views about personality and self-concept as it

is related to self-report: (a) that the self-concepts of most adults are reasonably accurate representations of their personalities at any age, in other words, that personalities do not change greatly (McCrae & Costa, 1982); and (b) that self-reports are influenced primarily by self-concept, which may or may not reveal the true self (personality), but may reflect what the individual thinks he/she is like (Rosenberg, 1979).

> Regardless of their views on its origin or relation to underlying personality, most theorists agree that the self-concept mediates or determines self-report data. As the idea that the individual has of him- or herself, it forms the basis for responses to adjective checklists, personality inventories, and other self-report assessment techniques. (McCrae & Costa, 1982, p. 1284)

Affective Instrument Construction

The theoretically based conceptual definitions are the basis for affective instruments. It is from these conceptual definitions that appropriate operational definitions follow (Gable, 1986). In order to operationalize the definitions, it is necessary to generate a description of the behavior, perceptions, and attributes of a person who has low and high levels of the particular characteristic. The literature highly recommended the domain-referenced approach, which was modeled by Hively (cited in Gable, 1986), to carefully define operational definitions of affective characteristics. The model first looks at the target and direction of the characteristic and then its intensity (Gable, 1986).

Anderson (cited in Gable, 1986) reported that all affective characteristics must show three attributes: intensity, direction,

and target. Intensity refers to the degree of feelings reported about the object or situation. The direction refers to the positive or negative feelings, and the target reflects the object, behavior, or ideas at which the feeling is directed. Gable (1986) used the Gable-Roberts Attitude Toward School Subjects Scale (Gable & Roberts, 1983) as an example throughout his book Instrument Development in the Affective Domain. He wrote:

> The later importance of developing good transformed statements lies in the fact that all of the resulting statements should, in the example, reflect the a priori category of General Interest. It is hoped that content similarities among these statements will lead later respondents to provide internally consistent responses to the items that have been clustered on an a priori basis into the category "General Interest." (p. 18)

Gable promoted the use of interviews and observations to gain as many insights as possible into the concept and also to pick up as many different ways of saying things as one can.

Validity is always a question in the affective domain. Gable discussed two types of arguments about validity: judgmental and empirical. Judgmental is done before the actual administration, and empirical is done as data are collected from the instrument. The two types of validity that are of concern are construct and content validity. Content validity concerns whether the questions in the instrument really cover the desired content. Construct validity is determined by the analysis of the data that are collected by administering the test.

McCrae and Costa (1980) discussed some ways to address the validity of self-report tests. The first method is to use raters or

observers in addition to the self-report. Spouses have been shown to be able to give valid ratings. The problem after one leaves the family relationship is to determine who the raters will be.

> Although ratings are no more free from artifact than are self-reports, ratings by professionals have been validated against independent ratings by other professionals (Block, 1971), and peers and spouse ratings have been validated against self-reports (Funder, 1980; McCrae, 1982), so the premise that ratings have some basis in objective reality is plausible. (Costa & McCrae, 1982, p. 1285)

A second way to validate is through the use of a panel made up of experts in the content area. They are given the instrument and asked to rate the questions as to their ability to measure the desired construct and the way that it has been operationalized.

Factor analysis is used to examine empirically the interrelationships among and between the individual items of the instrument. Clusters of items that share variations are formed, and the questions that do not fit into a particular cluster are removed or put into a different context.

Initial Instrument Development

The initial step of the development of the Openness to Learning Scale was talking with people who might have attempted similar processes or who might be able to shed some light on the process of instrument development. These conversations opened the door to many considerations that needed to be attended to if the instrument was to be a meaningful and useful tool. Instrument development at this stage seemed to be accompanied with many "Yes, but. . . ." responses. Considerations began with a clear statement of the

construct and following through to a concern for participants who might be less than honest regarding their assessment of their own openness to learning.

The first thing that became very clear was the need for the development of a concise and direct statement that explained the construct or concept of "openness to learning." This statement would be given to people who were about to become involved in the assessment development at some stage. It would attempt to bring all participants to a similar access point. It would become very important to indicate to participants within this statement that the concept goes beyond the person who stays within his/her own surroundings to study a narrow topic of interest. Openness is approaching a way of life. It is cross-disciplinary. It has to be a construct that one would recognize. The scale would measure against the ideal open to learn person. One example that surfaced during a brainstorming session was about a class that filled out the class evaluations at the end of the class. The professor realized that the students fell into three subgroups. The first group did not like or enjoy the challenge of the class. The second group thought that the class was a challenge but really did not care if they were challenged or not. The third group, which was the smallest of the three, loved the challenge just because it was a challenge.

When validation was discussed, the most perplexing problem that surfaced was one of involving participants in the validation process without using confederates to point out people who were open or not.

Asking people to identify participants who are open is not a major problem, but asking them to identify participants who they feel are not open to learn would be very difficult. Some of these issues would have strong ethical concerns and could show a lack of researcher concern for the participants. A self-rating scale of some sort became clarified as a promising way of dealing with some of these issues. It would be even better if, in addition to a self-rating scale, someone else could rate the participant so as to produce comparative data.

With a self-rating scale, one always runs the risk of the participants responding as they think they should in order to do well. One possibility would be to have two ratings over a period of time or to not have the participant rate himself/herself until some time after he/she responded to the instrument. Still another concern was the challenge of developing the instrument so that it focused on one's own openness to learning and not on the clientele or students with whom the participant worked.

The expert panel seemed to be a must and a step that would be manageable. A good approach would include a thorough search of other instruments that could be related in some way to the concept to be used. The Buros Mental Measurement Yearbook was used to locate similar instruments. Those instruments mentioned in the literature would also be used as a resource.

Instrument Development

Theoretical Instrument Development

The primary tasks during the theoretical instrument development stage were to further develop the concepts supporting the Openness to Learning Scale and to identify characteristics connected with openness and learning in the literature. The first task employed a preliminary interview. The second task involved an extensive review of the literature.

The preliminary stage of this research included the assessment of the utility of the instrument that was proposed for development and an information-gathering process to further clarify the terms that were to be used. How exactly could the concept that was being investigated be described to the people who would be involved? A thorough scan of the literature was conducted, and preliminary sketches were made of the possible content areas an instrument of this type might cover. Sample questions were developed to help clarify the concept. As a result, the interview method was selected as a way of gathering additional preliminary information about the concept of "openness to learning."

A convenience sample to be interviewed was selected by the researcher. Interviewees were primarily selected as people who would easily identify with the concept and would be open and honest about their comments and concerns. Only people known to the researcher were used for the interview. However, several nationally known educators were also interviewed following conference appearances. These interviews were in an abbreviated form.

Five people were selected on the basis of their willingness to participate and be forthright with the researcher. Each would participate in a one-hour interview that would focus on the clarification of the term "openness to learning." The interview sessions were conducted one-on-one in a very relaxed and informal manner. Several of the interviews were conducted during a lunch meal. An interview instrument for this preliminary stage was developed to insure that the same information was gathered from each participant, but the interview was not limited to the established questions. The interview form that was developed and used for the preliminary interview may be seen in Appendix A.

Each individual was personally asked if he/she would be willing to be interviewed, and a meeting location and time were established. The initial discussion included the clarification of the focus of the interview as an interactive discussion/dialogue between the researcher and the interviewee to clarify the concept of "openness to learning." The interviewee was informed that notes would be taken but that this was not a data-gathering mission, simply one of clarification. This was a preliminary stage in the research and preceded the development of an actual data-gathering instrument. Each interviewee was also informed that key questions had been developed to lend some continuity to the interview process but that the questions were not designed to be a limiting factor in the discussion. The interviewee was assured that examples might be used but that no names would be recorded, that no attempt would be made

to use unobtrusive measures, and that the researcher would take notes only for further reference to the conversation and for further development of the concept. Although the results of the preliminary interview are recognized as a part of the methodology, the data are reported in Chapter IV so as not to interrupt the chronological steps of the instrumentation.

The second step in the process of theoretical instrument development involved an intensive review of the literature, especially keeping in mind the insights that had been provided through the interview process. An example of these insights is the high value that was placed on listening skills. As the review progressed, patterns began to appear in the content that was overlapping between different bodies of literature. Many of the characteristics that were used to describe the person who is open were also used to describe the person who is a good learner. Both were described as having good problem-solving skills.

These overlapping content/cognitive areas, combined with the interview information, allowed the researcher to identify five characteristics that were consistently referred to when the topic of "openness" was discussed in psychology, adult education, or learning-theory literature. The characteristics identified were reflective thought, the transfer of knowledge, problem solving, personal growth, and listening. Each of these characteristics had behaviors that were identified with them. These behaviors would help to identify a learner who demonstrates this characteristic. These characteristics would be considered within the affective

domain since they do not contain specific knowledge that can be measured, but do display feelings. The Openness to Learning Scale would attempt to measure the affective characteristics that exist in the learner surrounding these five content areas. Affective characteristics as described by Anderson (1981) are "qualities which present people's typical ways of feeling or expressing their emotions" (p. 3). Anderson went on to say that:

> . . . affective characteristics must have three attributes: intensity, direction and target. The intensity attribute refers to the degree or strength of the feeling. The direction attribute reflects the positive, neutral, or negative aspect of the feeling. The target identifies the object, behavior, or idea at which the feeling is being directed. (Gable, 1986, p. 3)

Having identified the five characteristics overlapping in the literature and meeting the intensity, direction, and target attributes, it became necessary to go back to the literature and identify specific behaviors that would be displayed by an individual who is open. Gable (1986) recommended that this step involve the generation of a list of perceptions, attributes, or behaviors of a person with high or low levels of this characteristic. This was done by taking each of the five areas of characteristics and developing a comprehensive list of the behaviors displayed by individuals who are said to be consistent with that characteristic.

Each behavior was considered from an individual's high display of that behavior to a low display of that behavior. The source of that information was also listed at the same time. The information was organized in a Behavioral Chart. From the Behavioral Chart,

instrument items would be developed that directly addressed the behaviors listed and, in turn, reflected in the characteristic. The instrument items would be developed by characteristic in an attempt to be comprehensive within that content area. Figure 3.1 shows a portion of the Behavioral Chart that was developed.

Characteristic: Transfer of prior knowledge

BEHAVIOR	HIGH DISPLAY	LOW DISPLAY	SOURCE
Flexible	Open	Not open	Naisbitt
Transfer info.	Spontaneity	Low spontaneity	Rembold
Can tap into prior knowledge	Improved recall	Less recall	Rembold

Figure 3.1: Example of Behavioral Chart.

As can be seen in Figure 3.1, three different behaviors were indicated as relating to the transfer of prior knowledge. These three behaviors were drawn from two literature sources, Naisbitt (1985) and Rembold (1986), and high/low indications of the behavior are included. The full Behavioral Chart can be found in Appendix B.

Psychometric Instrument Development

The Behavioral Chart that was constructed provided the basis to begin the item development. The instrument would be divided into three types of items. The first group of items would consist of statements that were able to show direction and intensity by using a

Likert scale. Participants would respond in a direction that was least or most like them. The second group of items would ask participants to choose one of two responses that would be least or most like them. The items would provide choices that were at the behavioral extremes of the characteristic being measured. The third group of items would be open-ended responses. They would be sentence-completion items that would allow for participant value expression. The target of the items would be determined by the consistency of the responses within the parameters of the identified characteristic.

At this point it was important to create clear and concise definitions for each of the five characteristics of openness to learn. This would provide additional clarity to the concept and allow further distinction between the characteristics to be measured. Each of the five characteristics--reflective thought, personal growth, problem solving, listening, and transfer of prior knowledge--was described through the research in the following manner:

Reflective thought. People who are open to learn should display a characteristic called reflective thought. Reflective thought implies that there is a constant inquiry into an individual's belief system. It is an ordering of thoughts that leads to a conclusion. Behaviors that are displayed by people who are thought to be reflective thinkers include a willingness to change, an open/unprejudiced approach, a desire to learn, a concern

to integrate and ground their learning in reality, and a preference to have a full view of their challenges.

Personal growth. People who are open to learn should display the characteristic of concern for their personal growth. This characteristic would be at the end of the Rogers (1969) continuum that associates significant learning with profound personal meaning. People who have this characteristic display such behaviors as an openness to learn about self, an openness to experiences, a holistic approach to learning, an awareness of their contributions in relationships, and an ability to function well in ambiguous situations.

Problem solving. People who are open to learn should display the characteristic of being able to solve problems. Rokeach (1960) explained that people who are open are more adept at looking at the many possibilities that are available. The problem-solving process is enhanced when people are able to look openly at their own beliefs and the possibility of changing those beliefs. Some of the behaviors displayed by people who are adept at problem solving are the realization that rules can change, their pleasure is expressed in working with problems, they like change, they are willing to question their own beliefs, and they realize the complexity involved in problems.

Listening. People who are open to learn should display the characteristic of being a good listener. A good listener realizes that there is much more involved in being a good listener than hearing the words. Some of the behaviors that are displayed by good

listeners are the ability to give their attention to the speaker, the ability to defer judgment, sensitivity to the speaker's feelings, joy in hearing the ideas of others, and the realization that listening is hard work.

Transfer of prior knowledge. People who are open to learn should display the characteristic of being able to transfer knowledge from one content area to another. They are able to make meaningful links into prior knowledge and to relate it to the situation at hand. People who have this characteristic display behaviors such as enjoyment that they receive from exploring concepts and ideas, an affinity toward open-ended experiences, a very broad view, an openness to experiences that involve many areas, and an ability to be flexible.

Item Development

Likert-Type Item Development

Ten to 15 items were developed for each of the five characteristics. The responses would be measured on a five-point Likert-type scale. The majority of the negative responses were assigned the number 1 and the majority of the positive responses were assigned the number 5. The exception would be those items that would be stated negatively. These would be recorded in the opposite direction to counteract the negative statement of an item. Participants were asked to select the number that best represented them as they read the item.

To explain further the method used, three of the items from this section are provided as examples, along with their corresponding behavior.

Example 1:

BEHAVIOR: gather wide range of information

ITEM: I like to have a full view of my challenges.

1	2	3	4	5
least like me				most like me

Example 2:

BEHAVIOR: assess self

ITEM: I closely monitor myself and assess changes that I need to make.

1	2	3	4	5
least like me				most like me

Example 3:

BEHAVIOR: nonjudgmental

ITEM: I am fully aware of my many prejudices.

1	2	3	4	5
least like me				most like me

Figure 3.2: Examples of Likert-type items.

The types of questions described here were part of the first 57 items on the scale. Each characteristic was used in at least ten items. These Likert-type items allow the respondent to show direction and intensity toward the statement.

Binary-Choice Item Development

The second set of items developed asked respondents to choose one of two choices that was most like them. These binary-choice items also were based on the five identified characteristics. These items were developed from the Behavior Chart previously described, which listed strong and weak behaviors of people who show characteristics of openness. The items were modeled after one category of items that appeared on the Experience Inventory developed by McCrae and Costa (1986). The difference in these items is that they are not measuring intensity, but they are measuring the respondent's consistency and value orientation toward the learning process. The two choices that are listed are at the high and low ends of the behavioral continuum of the particular characteristic. Figure 3.3 shows examples of these binary-choice items.

Example 1:

CHARACTERISTIC: listening

ITEM: During a communication I listen for:

facts ideas

Example 2:

CHARACTERISTIC: knowledge transfer

ITEM: I would rather be known as a/an:

expert facilitator

Figure 3.3: Examples of binary-choice value orientation items.

Open-Ended Item Development

The third set of items was also modeled after items found in the Experience Inventory. Respondents were allowed to express their values as they related to themselves as learners and toward educators. Rokeach (1973) clarified the difference between an attitude and a value: "An attitude refers to an organization of several beliefs around a specific object or situation whereas a value refers to a simple belief of a very specific kind."

Allport (1961) said that a value is a conception of the desirable, what ought to be desired. By completing the sentences, respondents could describe their view of the ideal educator and the feelings that they had about themselves as learners. An example of an open-ended item is shown in Figure 3.4.

Example:

A good learner is _____.

Figure 3.4: Example of an open-ended item.

Additional Instrument Development

During the theoretical development of the scale, it became very apparent that the language used would be a critical factor. Keeping track of this language began early on with the preliminary interviews, with the researcher listening carefully to the language that was used to describe the characteristics and behaviors of people who are open to learn. To further carry out this concern for the development of the language base that would be used to describe people who are open to learn, another type of item was added. It would ask respondents to clarify further the concept of being open by asking them to list four adjectives that describe them as learners. Part of the validation of any instrument is the use of the correct language. In adding to the adjectives that had already been collected from the literature and the interviews, it was thought that it would provide valuable future information and allow for additional validation.

Demographic Data Collection

An important part of any instrument is the demographic data that one chooses to collect. The question becomes one of

determining the data that may be of assistance in further analysis of the instrument. This instrument dealt with learning. Therefore, the foremost interest was to find out the level of formal education the respondent had. To be one step removed from the respondent, the formal educational level of the parents was also requested. It was also asked if the respondent was single or married. This might or might not become useful. The person's job title could become vital, depending on the setting in which the instrument was being used. Additional information requested consisted of the respondent's age, gender, and years of employment with the organization.

In summary, the overriding factor that governed item construction was the development of items that addressed the operationalization of the theoretical concepts that were identified in the first steps of the theoretical development. This is extremely important for the future validation of the instrument. The vocabulary was developed by the domain-referenced approach, which was developed by Hively and used in the development of achievement tests. It is a method of breaking down the question to identify the activity to be measured, the target, possible verbs and adjectives that can be used, and the relationship it has to the characteristic. Much of this work was incorporated into the Behavior Chart that was developed, but some items demanded an intense search for consistent vocabulary. Another method that proved to be extremely useful in vocabulary use during item development was the careful accumulation of language that was

consistently used as descriptive language during the interviews and the literature review.

Expert Analysis

Gable (1986) pointed out that the validity of a test is the most important consideration. Is the instrument measuring what it is intended to measure? The investigation of the validity of an instrument is an ongoing process, but it is particularly important in the initial stages of development. The considerations that validity involves are the appropriateness of the instrument, the meaningfulness and utility of the instrument, and the inferences that are made about the respondents from their scores. The validity of an instrument can be argued with two types of evidence: judgmental evidence and empirical evidence. It is the content validity, measured by judgment, that should be given high priority during the instrument development. "The evidence of content validity revolves around judgments regarding the universe of content from which the instrument developers have sampled in developing the instrument" (Gable, 1986, p. 73).

Content validity asks the question: Do the items in the instrument adequately cover the intended universe of content that was used? In other words, have the theoretical rationale and conceptual definition been carried out in the instrument? In the development of the Openness to Learning Scale, attention was devoted to the content validity during the theoretical stage and the

item-development stage. Now it was carried a step further, via the expert panel.

Gable (1986) recommended a panel of experts as one of the most effective and efficient ways to check the content validity of an affective instrument. It is recommended that a panel consist of professionals who have content expertise in the area of the affective characteristics that are under consideration.

The Openness to Learning Scale content validity was a prime candidate for Gable's recommendations. A panel of experts was formed to address this validity question. The panel was selected by the invitation of the researcher. This panel consisted of four experts from various backgrounds related to the content of the scale. One expert was selected from each of the fields of sociology, adult education, psychology, and counseling.

A Validity Rating Form was developed, which would allow the panel of experts to look at each item and individually rank it based on two different criteria. A numbering system was developed, which allowed the items to be assigned numbers that referred to the characteristic that it was originally intended to measure and an item number within the instrument. The experts' Validity Rating Form was numbered with the same system so that the items of the rating form would correspond with the instrument items. The experts were advised that they need not be concerned with answering the instrument items unless they chose to do so. Their real task was to focus on the validity of each item. Each expert was also provided an operational definition of what was being measured. (This rating

form can be seen in Appendix C.) The expert was then to read the operational definition and assess the strength with which each item addressed the definition.

The experts were asked to respond to two questions about the item. The first ranking was to determine the strength of the item as a measurement of the operational definition. Was the item a strong, medium, or weak measure? The second request asked the expert to place the item within the content of one of the characteristics identified for measurement. Which characteristic do you feel the item is measuring? Figure 3.5 provides two examples from the Item Rating Form that was used by the expert panel.

Item 3-5

An important aspect of my approach to learning is to take "time out" to ponder what I am trying to learn.

Example: Strength of the item measurement

weak medium strong

Example: Choose content area item best measures

listen / know trans / probl solve / ref tho / pers gth

Figure 3.5: Example of the Item Rating Form for expert panel.

Following their assessment of the instrument, two of the four experts were interviewed in person. They were asked for further suggestions, comments, or changes that should be made in the

instrument at this point of development. The following suggestions were made and implemented: (a) to place questions in random order; (b) to take out words that might be "emotion laden": humble, sensitive, honesty, intense; and (c) to change the wording of several items for clearer expression of meaning.

When all of the expert Item Rating Forms had been collected, a tally was made. (The tally is displayed in Appendix D.) The tally established a way to look at the initial data provided by the experts.

Expert Data Analysis

The first consideration was the strength of the individual items as assessed by the experts. Each of the items was given a score that would denote the average expert assessment of that particular item. To make the score quantitative, the item was given a 1 for a weak mark, 2 for a medium mark, and 3 for a strong mark. These assignments were then totaled and divided by the number of experts who looked at that particular item to provide an average rating. This was necessary because most of the items were scored by four experts, but a few had only three marks. By taking an average it would be possible to compare ratings of all items. The scores ranged from 1.7 being the weakest item to a score of 3 as the strongest item. (The complete table can be seen in Appendix E.)

Having calculated a score for each item, it became readily apparent that the bulk of the items were seen by the experts as important in measuring a person's openness to learning. Only four

items received a score of less than 2. Nineteen items received scores of 2.0 to 2.5. The remaining 45 items fell between 2.5 and 3.0.

The second collection of data gathered through the expert assessment of the items was that which asked the experts to select the content area to which each item best related. The first step was to look at the items upon which all experts agreed. There were 13 such items. An additional 26 items were agreed upon by at least three of the four experts. Of the remaining 19 items, 11 were split between two of the content areas and the last 8 showed no agreement by the experts as to what the item was measuring.

By comparing the expert measurement of the content area of each item with the literature measurement, it was determined that there were 31 items that were agreed upon. The remaining items showed some kind of split in the decision of the experts as compared to the literature. The biggest discrepancies were in the area of knowledge transfer. It was often split with problem solving. This could indicate the lack of a clear definition of knowledge transfer. The other four areas seemed to be well understood by the experts, with their views being similar to that drawn from the literature. Appendix D shows the items and corresponding content areas as defined by the literature and by the experts.

The last step involved a comparison of the content area that the item was measuring with the strength score that had been calculated for each item. The question at this point involved the consistency of item strength and accuracy of content measurement.

This comparison gave additional positive or negative support to the items that had proven to be consistent throughout.

The first cluster to become evident was those items that could be eliminated. It seemed appropriate at this stage to eliminate those items that had a score of less than 2. These items had all received at least one mark that indicated the item was weak. Furthermore, they all had split distribution of expert placement within a content area. This group consisted of Items 1-3, 5-7, 4-7, and 4-13.

The second group of items to be eliminated was those that had no consistent agreement on the focus of the item content measurement. The criterion for elimination was the requirement of at least three experts agreeing on one content area for an item. This group consisted of 16 items.

Of the remaining 48 items, 31 had a score of at least 2.25 and agreement from the experts as to the item measurement. These items were identified with a "K" to indicate that they would be kept in the scale at this point. Of the remaining 17 items, some had a very high score, but there was not agreement on the content area. These items needed further analysis. (A complete list of the retained and eliminated items may be seen in Appendix E.)

The next step was to do an item analysis based on the scores produced from the actual administration of the scale. This information would give the additional support for the strength of items and the cross-check to make certain that the items had been placed in the correct content areas.

Field Test Population and Sample

An item analysis requires data that are collected through the administration of a field-test version of the instrument. Part of the process of administration is the selection of a population. This study used a sample of adult educators from the Michigan Cooperative Extension Service (CES). CES is an educational organization, tied to a land-grant university, that employs professional adult educators with diverse backgrounds. The bulk of the past programming has been done with a focus on the rural population within communities. Recent shifts in programming have taken a broader view of the community as a whole and the needs of the urban population.

The CES divides the state into regions. Each region, in turn, contains a cross-section of adult educators who deal with agriculture, home economics, natural resources/public policy, and youth programs. These regional educators are housed within their respective communities and supervised by the university involved. They blend local and university resources and funding.

A region of the CES was selected as the population used in this study for three reasons. First was the convenient structure of this organization, which afforded a group that displayed characteristics reflecting the entire organization. Second, the adult educators in this region were all supervised by a single person who also agreed to take part in the study. Third, the educational backgrounds of the adult educators employed by this organization ranged from highly

technical experts to generalists. This third criterion provided a population who would test suggestions found in the literature describing the characteristics of people who are open to learn.

Sample Selection

A high priority in the selection of the sample was the elimination of any bias that might be added to the process by the researcher. When the materials were given to the supervisor for the assignment of ratings, the supervisor was requested to seal the results of her ratings and to return them to an outside observer who had participated on the expert panel. The expert took the ratings that had been given to the population of 54 and from that listing selected a sample for the study. The individuals in the sample were assigned numbers, and the expert held the sealed ratings until all of the data from the sample had been collected and analyzed. The final step in the analysis of the data was to look at the sealed ratings. This measure was taken in order to have as bias-free selection of the sample as possible and to keep the respondent results separate from the supervisor ratings so that one would not influence the other.

Distribution of the Instrument to the Sample

The list of those selected to become participants in the validation process of the Openness to Learning Scale was completed by the expert and given to the researcher. The completed version of the scale was ready for distribution. In trying to devise some

creative, yet meaningful way to attract the immediate attention of the participants, the researcher decided to ask the participants to take an Old English tea break. They were provided with the tea for this break and a pencil with which to complete the Openness to Learning Scale. Participants were asked to take a few minutes to think of themselves as learners and to complete the scale.

The researcher assured the participants of the confidentiality of the scale and also indicated to them that the instruments would be numbered so that future information could be provided to them. Each participant on the list of 22 participants was assigned a number. Each page of the instrument and the return envelope, which was provided, was numbered by hand with the corresponding numbers. The completed packet including the numbered instrument, the tea bag, pencil, and numbered return envelope with postage paid was mailed to the 22 participants. The field-test version of the Openness to Learning Scale that was distributed to the sample may be seen in Appendix G.

Supervisor Rating

One of the validation problems that accompanies a self-assessment instrument is the validity of the self-report. It seems that respondents often consciously or subconsciously respond as they think they should, rather than how they personally feel. One way to make a cross-check of this possibility is to also use a non-self-report rating method. These ratings can then be compared to the self-report ratings:

> Ratings seem to provide the most adequate alternative to self-report, particularly since they can employ the same format as self-report personality inventories, and their psychometric qualities can be readily assessed. Ratings share with self-reports the use of a human observer who can interpret specific behaviors as evidence of underlying traits, but they are free from the particular artifacts that may distort self-report measures. In particular, the tendency to maintain a consistent image of oneself cannot be expected to influence one's ratings of others. (Costa & McCrae, 1982, p. 1285)

A problem that is presented by the rating system, as pointed out by Costa and McCrae, is whom to choose as a rater. Costa and McCrae used spouses as raters, but in this case, which involved a professional attitude and not personality, the work supervisor was chosen as the rater:

> Although ratings are not more free from artifact than are self-reports, ratings by professionals have been validated against independent ratings by other professionals (e.g. Block, 1971), and peer and spouse ratings have been validated against self-reports (Funder, 1980; McCrae, 1982), so the premise that ratings have some basis in objective reality is plausible. (Costa & McCrae, 1982, p. 1285)

In this research, the writer looked for someone who held a common position with the entire sample. This person, referred to as the supervisor, worked equally with each member of the population. She was in a very good position to monitor the learning habits displayed at work by the participants. The supervisor saw their personal learning plan, a plan of most inservice education in which they may have been involved, and their overall attitude on the job as professional educators.

After the supervisor had been selected as the rater and had agreed to participate in the study, it became necessary to provide the rater with not only the materials to carry out the required

rating, but also the operational definitions that would allow her to understand the concept and assign the ratings. A set of operational definitions, which consisted of the descriptions of five levels of openness, was developed. The definitions were developed by using the data that had previously been assembled in the theoretical development of the instrument. The starting point was the description of the persons who are most and least open to learn. Using both ends of the continuum provided parameters for the middle three. These middle three definitions were developed on the basis of a true distinction between levels of openness. These definitions would be accompanied by a Likert scale ranging from 1 through 5, with 1 being the least open and 5 being the most open to learn.

The operational definitions for the supervisor's ratings were as follows:

1 = The person who is not open to outside learning possibilities and is very comfortable knowing that he/she has enough knowledge to deal with his/her day-to-day needs.

2 = The person who is very narrow in his/her learning approach and as a result learns only within topics that are of major interest to him/her and resists learning in areas outside of his/her major interests.

3 = The person who does not resist learning in any area, but does not actively seek out or create new opportunities for personal learning and personal growth.

4 = The person who is excited about learning and actively seeks out learning and personal growth opportunities for himself/herself and others.

5 = The person who approaches personal learning and the learning of others in a proactive, holistic manner, who is self-aware and is in constant search of options, opportunities, and environments that challenge.

The supervisor was able to assign each professional in the region an openness to learning score. The supervisor was given a letter that explained the task, a scoring sheet, a copy of the overall operational definition of openness to learning, and a new set of operational definitions that accompanied each 1 through 5 score. The material that was given to the supervisor may be seen in Appendix F. The supervisor was asked to assign each of the 54 people in the region an openness to learning score. When that task was completed, the list of scores would not be given to the researcher, but would be held by an outside observer.

The ratings assigned by the supervisor were used for the validation analysis. This step became a major tool in the empirical validation of the Openness to Learning Scale. Those ratings assigned were compared to the ratings that participants assigned to themselves when the sample actually responded to the instrument. This step allowed for another validation method in which the researcher was not involved other than to facilitate the rating.

Statistical Analysis

This self-report instrument had been constructed so that it had items that belonged within the content scale of one of the constructs. To this point a great deal of time had been spent with the content of the constructs and with the item development. Now the development would involve another aspect of validation of the instrument. The self-report instrument was designed so that the questions would fall into content areas or scales. There were five scales. It was statistically possible to measure quantitatively the reliability of each of these items within its assigned scale and to measure the entire scale as it correlated with each other scale.

The SPSS reliability computer program was used. This program uses the instrument items as variables and places them in the assigned scales to measure how well the scales hold together and correlate. Pearson correlation coefficients were also calculated for each item. This coefficient would be compared to each other question in the scale with and without itself included. The negatively correlated items would be eliminated. After the statistical information was generated for each item and each scale, the positively correlated questions would be compared to those that scored high in the content area.

Summary

The initial steps of the instrument development were extremely time consuming, but as Gable (1986) indicated, this part of the process is important for laying a solid foundation. After the

initial concept clarification, review of the literature, and development of the list of characteristics and related behaviors, the rest of the process was relatively uncomplicated. This can be attributed to the close attention paid to the theoretical and psychometric steps that are involved in self-report instrument development in the affective domain. A sample was selected, from whom the necessary data to do an item analysis would be collected. Additional data would also be collected for the further development and validation of this instrument through the open-ended items. The result of this step-by-step process was an instrument that could be used with a select population of professionals to determine if their openness to learning could be measured in a meaningful way. The instrument was in a state of validation so that it could become a useful tool in working with professionals in their own professional development.

CHAPTER IV

PRESENTATION OF THE STUDY DATA

This chapter presents the data collected at each step of the research process of validating the Openness to Learning Scale. The process began with a preliminary interview and a literature review, which constituted the theoretical instrument development. The data from the initial interviews are reported at the beginning of the chapter. The remainder of the data reported in this chapter were collected from the sample used in the field study. This sample is described in greater detail.

The instrument itself contained some open-ended questions that were intended for data collection. A summary of the resulting data is reported early in the chapter.

The instrument field test resulted in two kinds of data. The first to be reported is the analysis of the items included in the instrument. This analysis takes a close look at the reliability of the instrument. The last type of data to be reported is the content data collected as the sample members responded to the instrument content. All of these steps made it possible to develop a cohesive instrument.

Results of the Preliminary Interviews

The interviews were held in a very informal manner, with the primary goal being the clarification of the concept of openness to learning. Four people were interviewed in depth, and two more were asked to clarify what the concept meant to them. The first question that was asked of each participant set the stage for the following questions:

OPENING QUESTION: What does being open to learn mean to you?

The data from this question fell very clearly into five categories. All agreed that a person who is open to learn must be willing to receive information. There seemed to be two ways to do that--by listening and by observing. In addition to this first qualification, a person must be willing to examine self, willing to change self, willing to change circumstances, and willing to plan change or be proactive about change.

The discussions that were focused on listening indicated that a willingness to listen was not sufficient for a person who is open to learning. Such a person listens and observes, which are both processes of taking in data. But the part that was stressed by all participants was that this person must also be able to entertain ideas. It is a matter of willingness not only to listen to ideas and information, but also to entertain and welcome those ideas or information. One person said,

> There is a definite difference between hearing and listening. Holding judgment is so important in being able to really listen until one gives it [the idea] a chance to see if it can be

> integrated into thoughts or not. Being open to learn means being able to entertain an idea.

Another said, "Listen and watch are the two things that stand out." As a result of this preliminary interview process, listening was singled out as one of the major things that could be measured in a person who is truly open to learn.

QUESTION: When are you more open to learn?

Information gathered suggests that people become more open to learn when they are surrounded by people who are open themselves and therefore encourage it in others. One participant said, "My major factor involves the people around me. If they encourage me and are interested enough to interact, listen and share with me it makes me more open to learn and share." Another said, "Openness to learning is a two-way street between abilities and attitudes. It is a construct that any teacher would recognize." The surroundings or environment seemed to be extremely important. The people around a learner make up a significant part of those surroundings and may play a major role in the other factors that were mentioned. An additional factor that was shared by the participants was the importance of a relaxed atmosphere--the lack of stress where one can truly explore. There is a real consideration given to a mutualness that is necessary to be open to learn. Learning from others, being relaxed around others, being encouraged by others, and the willingness of people to share ideas and feelings are all factors that were described as leading to a relaxed environment that would foster openness. In this environment, time is devoted to reflect on

the learning that is going on or that has gone on in the past. It becomes a natural part of the flow. Another factor that is missing in such an environment is competition. It is the mutualness that fosters openness.

QUESTION: When are you least open to learn?

The mood of the participants changed as this question was discussed. The behaviors observed implied that an environment that restricts openness to learning invoked negative emotions in the participants. The major concern centered on being placed in close proximity to people who are judgmental. One person said, "My first concern is the person who comes on as though there is only one way to do something. Their way is the right way. This really turns me off because there is no place for me to have any input." A second concern was that of stress. It seems that as a person becomes more stressed, regardless of the reason, the level of openness goes down. One takes on the survival mode when under stress, and it means just getting the essentials done and over with. Learning is extra! "If I take the time to place myself into a situation where I expect to learn and not manage, I become very open. It is refreshing." Being stressed and rushed seems to be at the other end of the continuum from being relaxed and having time to reflect. All of the opposites were mentioned. Participants were not open to learn when there was not time for them to process, when things were rushed, and when competition was present or the lack of a sharing atmosphere existed.

QUESTION: How do you act when you are open to learn?

The person who was described was alert, attentive, and doing something with the hands. They were listening and offering ideas in a free flow. They felt eager, safe, and accepted. Not only were their ideas accepted, but they themselves were also accepted. There was a general atmosphere of wanting to learn.

QUESTION: How do you act when you are not open to learn?

The person who is not open to learn was described as not attentive and perhaps daydreaming. They are not listening and may have shut out what is being said. They are threatened and therefore are not offering their ideas or themselves. They do not feel accepted and are not willing to try to bridge the gap.

QUESTION: How does change fit into being open to learn?

One person explained,

> The attitude of many people that I run into seems to be that they are comfortable, safe, think that there is only one way to do things and have no desire to change. This way has worked before and it is safe. These kinds of people stand in the way of people who are open and stop a lot of things from happening.

Being open to learn is a process by which one is open to trying, attempting, and pulling together things and ideas that were somehow unrelated; these processes all lead to change--changes in oneself and changes in things around one. Change is the pivot point of being open to learn.

The insights drawn from the preliminary interviews can best be summed up in the words of one of the interviewees:

The process of becoming aware of when one is open to learn and when one is not open to learn is a process that many people may never go through. I would have struggled with the concept at many points in my life. I would have been trying to make the content of a subject area fit. Openness to learning would have been a willingness to memorize facts or information and spit it back in some way. A person who is not open to learn is looking for structure, a message, some control or direction and most of all is concerned with what the product is supposed to look like. What is the task, the map of how to accomplish it and the picture of what the end should look like? This person searches for ways to keep things in some kind of order, which also means keeping things separate rather than putting them together. This person can be very productive, but the product will not likely be something that is original and it will not likely combine any ideas, concepts, or knowledge. People who are not open will never find themselves making forced relationships. They will always be working overtime at separating out the facts and dealing with them in their own compartments. I have noticed that often the language of openness is picked up by people who are not really open. They are saying the right things, but often the behavior does not match. One may express that they have a vision, but further investigation reveals that the vision is a dot on the wall, not the whole wall. The person is headed straight toward that dot with no changes or diversions. That is not being open to learn, that is heading straight for the dot on the wall. I wonder how this person would ever make a connection between cattle and music. Still another kind of person who is not open to learn is the person who is so passionate about a cause of some kind that they have gone beyond the point of being able to look at any other views. They redouble their effort well after they have lost sight of the objective. Yet this person would describe themselves as the most open to learn person. It all goes back to listening and holding judgment. If a person can hold judgment and listen, they can entertain an idea and in turn they can change to incorporate the idea. This person is open to learn.

These preliminary interviews resulted in data that would be linked to the literature. The data that proved to be literature based would be used to define the concept of openness to learning in more specific terms.

Population Used for the Openness to Learning Scale Field Test

The population used for this study was the professional staff of the West Central Region of the Michigan Cooperative Extension Service, as explained in Chapter III. The population comprised 54 professional extension educators with varying job descriptions as far as content to be addressed. However, one thing that they had in common was that they were educators employed by an educational organization. From this population of 54, a sample of 22 individuals was selected by an outside observer. Of the sample of 22, 17 completed and returned the Openness to Learning Scale within the allotted time.

The demographic information requested from the sample included data from 16 of the 17 individuals. One instrument was completed without the demographics included.

The educational level of the sample included one Ph.D., ten master's degrees, and five B.S. degrees. The years of experience with the Michigan Cooperative Extension Service ranged from 6 months to 22 years, with a mean of 6.43 years. The sample included eight females and seven males. The age of the respondents ranged from 25 to 50, with 40 years as the mean. The sample cut across program areas, including three with the job title of county extension director, eight 4-H agents, two home economists, one agricultural agent, and one extension associate. One respondent described himself/herself as an agent, which could belong in any of the previously mentioned groups.

The group of respondents referred to throughout the remainder of this dissertation is the same sample as described, with the addition of the one instrument that did not contain demographic information.

Data From the Field Test of the Openness to Learning Scale

The open-ended questions included in the Openness to Learning Scale provided an opportunity for the respondent to express some personal values concerning openness to learning. The sentence-completion questions also offered an opportunity to develop the research base for the Openness to Learning Scale. For these reasons the responses to the open-ended questions provided data for the development of the additional descriptions that support the concept of openness to learning as an understood and therefore researchable topic.

The following questions were presented to the respondents on the last page of the Openness to Learning Scale. They are presented first, however, because of the nature of the data gathered through this method. The data relate to the basic clarification of the concept of openness to learning and therefore should come first. It should be recognized that some of the language used in the instrument may have influenced the responses to these open-ended questions.

QUESTION: A good learner is _____?

The respondents described a good learner as a good listener, one who is interested and open-minded. This person is open to new

ideas and opportunities. The learner is able to apply the new ideas to present life situations and to the future. A good learner asks questions, is curious and probing. He/she is eager, energetic, and motivated, with a never-ending desire to learn. The good learner is dedicated to the goal of acquiring more knowledge and sets clear learning goals and sticks to a plan of study and/or work. This learner is attentive at learning and gets involved in the learning process.

Six respondents mentioned the concept of being open to and looking for new ideas. Four respondents mentioned the importance of being able to apply these new ideas to existing or future situations. Four respondents also mentioned the importance of being interested in topics, subjects, and learning. Respondents thought that being open to ideas was the number one criterion for being a good learner. They believed the second criterion was that one must be able to apply these ideas in some way either to the present situation or to the future. Equally important was the learner's interest in the topic being dealt with.

QUESTION: The thing that I like most about myself as a learner is _____?

The respondents mentioned <u>willingness</u> as the thing they liked most about themselves as learners. It is a willingness to learn, to try, to listen, and to persevere. They also liked their ability and capability to quickly grasp and relate ideas to existing knowledge and to make the necessary changes to relate to their environment.

As learners they liked their open-mindedness and interest in many different subjects. Their enthusiasm would grow with each successive issue. They thought that everyone had something they could learn from. "It is a bad day when you don't learn something." "I enjoy learning. It invigorates me."

Five respondents listed their willingness as the thing that they liked most about themselves as learners. Two respondents made mention of open-mindedness, listening, the ability to connect new ideas, and the importance of their own enthusiasm. The responses were very positive. The joy of one's own learning clearly showed throughout the responses.

In comparing the things that appeared in the descriptions of a good learner and what one likes most about oneself as a learner, this sample population was very consistent. Respondents stated that the most important aspect of being a good learner is being open to new ideas, and as a learner the things that were liked most about self were the openness to new ideas and the willingness to learn. As reported, it is also important that good learners be interested in what they are doing, and the respondents liked their willingness to try new things.

QUESTION: A good educator is _____?

The respondents described a good educator as one who <u>focuses upon the needs of the students or clientele</u>. A good educator is a role model for learning and also a co-learner. The good educator is one who shows enthusiasm for learning, which draws the learner into

the process or motivates the learner. This person is able to communicate and project new ideas and subjects with clarity, yet remains flexible to adapt to the learner's needs. The good educator instills in the learner a "love of learning."

A concern for the needs of the learners was the single most important criterion for describing a good educator. Seven respondents out of 17 listed some kind of concern for the needs of the learners. Not far behind that concern was the importance of having one's own enthusiasm for learning be apparent in the educational process. This might indicate the strength of the role model as a very effective educational tool. Six respondents listed the importance that enthusiasm plays in being a good educator. Along with this enthusiasm was the concern that the educators know their own limits and that they be well informed about the subject matter at hand. Educators must be flexible and willing to learn themselves, as well as to educate others.

QUESTION: The thing that I like best about myself as an educator is _____?

The thing that the respondents liked best about themselves as educators was their ability to motivate and involve others in learning. They liked their ability to provide new experiences and delivery methods to challenge the learners to ask questions about their assumptions. They liked to listen and to be open to try new things and provide timely and positive feedback to the learner. They liked to share their enthusiasm for learning and the subject

with the learner. They tried to be open and helpful to the learner and to make learning fun.

Five respondents thought the thing they liked best about themselves as educators was their ability to motivate and to involve the learner. This group of respondents thought that being able to relate to the audience was the most important part of being a good educator. Through being able to involve others, the educator has a good feeling about himself/herself as educator. Four of the respondents liked to think that they in some way had challenged the learner through the learning experiences they provided as educators. Involvement with the learner stands out as a key criterion for feeling good about oneself as an educator: "The thing I like best about myself as an educator is the care and concern I have to help others learn."

The comparison of the descriptions of a good educator and the things that respondents liked best about themselves as educators showed that this sample was very consistent. The key elements that were listed as describing a good educator were also the things that respondents liked best about themselves as educators. The concern for being client/student-centered was apparent. The skill of motivating and involving others in their learning was the number one concern listed as a criterion for a good educator. The thing described most often as a measure of oneself as an educator was the ability to involve others. The importance that enthusiasm plays in one's role as an educator also was consistent in both the

description of a good educator and in the description of what one likes most about oneself as an educator.

QUESTION: A person who is "open to learn" can be described as _____?

The person who is open to learn was described by the respondents as one who is in a constant state of self-development/improvement/growth. The person who is open to learn sees the advantages in expanding one's own horizons. This person is seen as being open to life and open to change. The open to learn person is not only receptive to new ideas but is curious and seeks out new ideas, information, experiences, and opportunities that perpetuate one's own learning. This open to learn person is seen as alive, interesting to others, wise, and captivated by a variety of activities and topics.

The responses given to the open-ended questions were very complete. There was very little disagreement as to what a good learner or a good educator is. When the responses were combined, they flowed together very easily to give a well-rounded completion of the sentence. Many of the responses were repeated a number of times, which indicated agreement or centering of responses among the respondents. It also points out that these descriptions, as compared to those that were developed from the literature for use in this study, had very little variance. The concept of a good learner and a good educator appears to have substantial support as to the agreement within and among the respondents and also with the universe of literature that was used for this study.

The responses that revealed what the respondents liked most about themselves as learners and educators related well to the responses that had been given to the previous question describing a good educator and a good learner. Respondents pointed out that the most important criterion for being a good learner is the receptivity to new ideas, and when stating what they liked most about themselves as learners they also pointed out the willingness to learn and to respond to new ideas. This pattern emerged a second time when comparing the good educator with what respondents liked about themselves as educators. This time, however, it centered on being client-centered and showing enthusiasm for learning. The responses were consistent and provided support for the concepts being addressed. The descriptions that resulted by combining the responses from the open-ended questions could easily be used as operational definitions for subsequent studies.

The respondents were asked to provide some examples that they would consider representative of their own openness to learning. The rationale behind asking this open-ended question was to get a feel for the way the respondents saw themselves as operationalizing the concept of openness to learning. Figure 4.1 lists some categories under which respondents gave examples.

Categories under which respondents listed examples of their openness to learn:

Reading
Formal Education
Self-Taught Projects
New Things Tried
Information Gathering

Figure 4.1: Examples of respondents' openness to learn, by category.

The respondents provided a full list of examples of their openness to learning. The one example that was mentioned most often was reading. It seems that reading is something that these respondents thought of as a descriptor of their openness to learn. Experiences in formal education were mentioned repeatedly. Degree work and inservice education were seen as an important part of being open to learn. But being self-taught was also an important factor that provided many avenues for respondents to explore new learning opportunities. Being open to try new things was another frequently mentioned response. The range of new things tried by the respondents ranged from foods to authors and activities. These respondents had a wide variety of ways in which they manifested what they believed was their own openness to learning.

Figure 4.1 shows that openness to learning can be viewed from a wide array of perspectives. The more specific examples included formal types of education, reading, and things that are self-taught. The more general examples leaned toward philosophical approaches to

specific things that are done to display openness to learning. As one respondent put it, "I try to make change to improve." Another said, "I try to find opportunities to explore new and unfamiliar avenues. This exposure to new ideas is what stimulates me and builds my resources and energy level." Two responses included the word "fear" or "afraid." The use of this language may indicate that at some points there is an element of risk involved in being open to learn. The enthusiasm of one respondent shone through as this philosophy was shared:

> I believe knowledge and information are keys to opening many doors to our future. I get excited about learning new things. I love to learn! This attitude is one of the best things an educator can share, because learning is enhanced with the right attitude.

Each respondent was asked to list four adjectives that best describe him/her as a learner. The resulting list of adjectives can be seen in Figure 4.2. The adjectives are listed, along with the number of times respondents used each one as a descriptor.

The word "creative" was most often used as respondents described themselves as learners. As referred to in Chapter II, Parsons et al. (1984) tried to show a distinct difference between openness and creativity. They were unable to support the view of distinction between the two characteristics. This group of respondents seemed to support the idea that there is no distinction. At least the respondents thought that "creative" was a good descriptor of themselves as learners.

Adjective	Times Used	Adjective	Times Used
Creative	5	Interested	2
Open	4	Motivated	2
Quick/fast	3	Willing	2
Enthusiastic	2	Determined	2
Thoughtful/polite	2		

Adjectives Used Only Once:

Attentive	Intelligent	Insightful
Motivated	Challenging	Questioning
Persistent	Easily distracted	Must study
Responsible	Innovative	Continuous
Organized	Hard working	Trying
Curious	Good listener	Hands-on
Nonscientific	Objective	Avid
Constant	Variety of interests	Inquisitive
Involved	Probing	Resourceful

Words Given That Are Not Adjectives:

Visual	Slow	Relationship	Useful information

Figure 4.2: Adjectives respondents used to describe self as learner.

The word "open" was also used repeatedly. "Open" was also referred to in Chapter II. A distinction that Rokeach (1960) made was that "open" refers to the belief system, not to the content of that belief system. When the word "open" is used as a way of describing oneself as a learner, one can assume that the respondent is making the same distinction that Rokeach made.

Many of the remaining adjectives were found in the literature with the exception of the final category of adjectives, which seemed

to be unique to some of the individual respondents. The adjectives that also did not seem to fit were "attentive" and "polite," which were listed together. These adjectives were not commonly used. Further analysis showed that in at least one case the word "polite" was used as a descriptor by the same respondent who listed as examples of his/her own openness "not being afraid to ask questions" and "not afraid to disagree."

In summary, this open-ended question resulted in a data base of adjectives that respondents used to describe themselves as learners. Many of the adjectives were used in developing the Behavioral Chart and in constructing items for the Openness to Learning Scale.

Item Analysis From the Preliminary Field Test Data

The previous chapter dealt with the validity of the Openness to Learning Scale. The validity question is whether or not the instrument is measuring the construct it was designed to measure. The two main methods employed were the use of an expert panel and the use of an outside rater. These two methods allowed for the development of the final field-test version of the Openness to Learning Scale. Data were collected through the administration of the field-test version of the instrument. The data collected consisted of the responses to the Likert-type questions and the 11 binary-choice questions. These data were assembled to test the reliability of the instrument.

When checking reliability, the question that is being asked is whether the instrument is providing a consistent assessment of the

affective characteristics. In other words, are the scores internally consistent through repeated administrations of the instrument? When an affective instrument is administered, scores are obtained that fit into scales or item clusters. These scores are the sum of the responses to a set of items that have been written to measure an affective characteristic. Recall that the Openness to Learning Scale is designed to measure five affective characteristics: personal growth, reflective thought, knowledge transfer, problem solving, and listening. From these scores inferences can be made back to the conceptual definitions. In assessing the reliability of the Openness to Learning Scale, an attempt was made to estimate the amount of error in the scores. The less error involved, the more reliable the measurement and the instrument.

The field test of the Openness to Learning Scale produced 17 individual sets of data that were merged in order to conduct the statistical assessments needed to determine reliability.

> An item analysis can be conducted along with or prior to the factor analysis. If you have too few people in the pilot sample, the item analysis can be used to identify items to delete from the instrument prior to running the factor analysis. The item analysis will generate response frequencies, percentages, means and standard deviations. (Gable, 1986, p. 175)

Gable went on to say:

> The final analysis of the pilot data consists of examining the internal-consistency reliability of the item cluster defining each scale on the Likert instrument or concept dimensions on the semantic differential. The SPSS Reliability program is recommended for this analysis. For the Thurstone items the binary response pattern can also be analyzed using the alpha reliability formula. (p. 175)

The SPSS Reliability program recommended by Gable was used to assess the Openness to Learning Scale. In addition, Pearson correlation coefficients were calculated for each item as it was compared to its own assigned scale, to the other scales, and in the relationship of the scales to one another.

All of the data from the preliminary SPSS program are presented in Tables 4.1, 4.2, and 4.3. Table 4.1 shows the results of the SPSS Reliability analysis for each subscale in the Openness to Learning Scale. The Q listing to the extreme left refers to the specific item or items being examined. The first column in the table refers to the mean if the item in question were deleted from the subscale. The second column shows the variance in the scale if the item in question were deleted from the subscale. The third column describes how the item in question correlates with the other items in the subscale. A minimum recommended correlation is .2000. The final column provides the alpha for the subscale if the item in question were deleted from the subscale.

Table 4.2 shows the Pearson correlation coefficients for each item in the field-test version of the Openness to Learning Scale. The table demonstrates how each item correlates with each of the five subscales included in the instrument. The letters on the top matrix refer in abbreviated form to the five subscales, and the Q listing on the vertical matrix refers to the number of the items in question and the subscale to which that particular item was assigned. The top number in each column describes numerically the

Table 4.1.--Results of SPSS Reliability analysis for the preliminary subscales in the Openness to Learning Scale.

Item	Subscale Mean if Item Deleted	Subscale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
Personal Growth Subscale (PG)				
Q2	18.7059	12.8456	.5906	.7556
Q3	19.4706	10.7647	.6693	.7206
Q9	19.5882	11.0074	.4935	.7682
Q41	19.2941	12.0956	.5683	.7500
Q49	19.4118	12.7574	.2966	.8112
Q51	20.0000	9.3750	.7215	.7010
N of cases = 17		Alpha = 0.7863		N of items = 6
Reflective Thought Subscale (RT)				
Q4	23.0000	21.7500	.2605	.7036
Q16	24.2941	16.9706	.5675	.6369
Q26	24.5294	18.1397	.4427	.6668
Q28	24.0000	18.5000	.3328	.6932
Q33	23.7059	20.0956	.2352	.7099
Q37	24.6471	17.8676	.4094	.6746
Q39	24.2941	17.3456	.5201	.6484
Q43	24.2353	17.8162	.4190	.6722
N of cases = 17		Alpha = 0.7058		N of items = 8
Knowledge Transfer Subscale (KT)				
Q25	27.0588	21.8088	.2626	.6886
Q35	28.7647	21.3162	.2313	.6954
Q40	28.1765	19.6544	.2851	.6922
Q42	27.0000	21.6250	.3331	.6797
Q44	28.8235	17.4044	.6373	.6113
Q50	27.2941	21.2206	.2171	.6993
Q53	27.5294	19.3897	.3479	.6761
Q55	28.3529	16.4926	.6472	.6023
Q56	27.3529	19.8676	.3969	.6653
N of cases = 17		Alpha = 0.6960		N of items = 9

Table 4.1.--Continued.

Item	Subscale Mean if Item Deleted	Subscale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
		Problem Solving Subscale (PS)		
Q7	20.2941	12.3456	.1073	.5789
Q17	20.6471	10.3676	.4665	.4757
Q22	21.9412	9.1838	.2380	.5745
Q31	21.1176	10.6103	.5822	.4657
Q36	21.8235	9.6544	.4753	.4570
Q48	21.0000	10.5000	.2554	.5412
Q52	21.0588	11.0588	.1410	.5896
N of cases = 17		Alpha = 0.5660		N of items = 7
		Listening Subscale (L)		
Q1	18.5294	6.2647	.0231	.4853
Q5	18.5882	4.2574	.2299	.3972
Q6	18.8824	4.7353	.0898	.4755
Q8	18.8235	4.1544	.5068	.2832
Q19	19.5294	3.3897	.4330	.2467
Q46	18.5882	4.2574	.1295	.4706
N of cases = 17		Alpha = 0.4480		N of items = 6

Table 4.2.--Individual item correlations from the field test of the Openness to Learning Scale.

Item	Subscale				
	RT	PG	L	KT	PS
Q1(L)	.2908 (17) p = .129	.3872 (17) p = .062	.2565 (17) p = .160	.1075 (17) p = .341	.2262 (17) p = .191
Q2(PG)	.1196 (17) p = .324	.6871 (17) p = .001	.2605 (17) p = .156	.2682 (17) p = .149	.3464 (17) p = .087
Q3(PG)	.1579 (17) p = .273	.7905 (17) p = .000	.3812 (17) p = .066	.3189 (17) p = .106	.4843 (17) p = .024
Q4(RT)	.3585 (17) p = .079	-.0808 (17) p = .379	-.2198 (17) p = .198	-.0160 (17) p = .476	.0391 (17) p = .441
Q5(L)	-.3114 (17) p = .112	.0199 (17) p = .470	.5330 (17) p = .014	-.0321 (17) p = .451	.0216 (17) p = .467
Q6(L)	.3635 (17) p = .076	.7013 (17) p = .001	.4075 (17) p = .052	.3039 (17) p = .118	.2046 (17) p = .215
Q7(PS)	.3660 (17) p = .074	.6092 (17) p = .005	.1302 (17) p = .309	.0404 (17) p = .439	.2951 (17) p = .125
Q8(L)	.0949 (17) p = .359	.4796 (17) p = .026	.6722 (17) p = .002	.1169 (17) p = .327	.1699 (17) p = .257
Q9(PG)	.3125 (17) p = .111	.6888 (17) p = .001	.1655 (17) p = .263	.0629 (17) p = .405	.3905 (17) p = .061
Q10(RT)	-.0339 (17) p = .449	.1415 (17) p = .294	-.4521 (17) p = .034	-.1747 (17) p = .251	.1831 (17) p = .241

Table 4.2.--Continued.

Item	Subscale				
	RT	PG	L	KT	PS
Q11(KT)	-.0138 (17) p = .479	-.0093 (17) p = .486	-.1108 (17) p = .336	.0820 (17) p = .377	.3049 (17) p = .117
Q12(PS)	.3099 (17) p = .113	.3933 (17) p = .059	.3689 (17) p = .073	.1195 (17) p = .324	-.1149 (17) p = .330
Q13(PG)	.2307 (17) p = .186	.0032 (17) p = .495	-.0344 (17) p = .448	-.3884 (17) p = .062	-.4806 (17) p = .025
Q14(RT)	-.1025 (17) p = .348	-.2846 (17) p = .134	-.2950 (17) p = .125	-.4847 (17) p = .024	-.6332 (17) p = .003
Q15(PS)	-.0498 (17) p = .425	.0883 (17) p = .468	.2564 (17) p = .160	-.2370 (17) p = .180	-.4580 (17) p = .032
Q16(RT)	.7110 (17) p = .001	.4147 (17) p = .049	-.2016 (17) p = .219	-.0835 (17) p = .375	-.0092 (17) p = .486
Q17(PS)	.1147 (17) p = .331	.1390 (17) p = .297	.1666 (17) p = .261	.4980 (17) p = .021	.6271 (17) p = .004
Q18(RT)	-.2737 (17) p = .144	-.3632 (17) p = .076	-.2803 (17) p = .138	-.0404 (17) p = .439	-.3925 (17) p = .060
Q19(L)	-.0941 (17) p = .360	-.0051 (17) p = .492	.7148 (17) p = .001	.1653 (17) p = .263	.2918 (17) p = .128
Q20(PS)	-.1582 (17) p = .272	.0339 (17) p = .449	.3182 (17) p = .107	-.4208 (17) p = .046	-.2952 (17) p = .125

Table 4.2.--Continued.

Item	Subscale				
	RT	PG	L	KT	PS
Q21(L)	-.1731 (17) p = .253	.0126 (17) p = .481	-.1818 (17) p = .242	.0966 (17) p = .356	-.0222 (17) p = .466
Q22(PS)	-.2448 (17) p = .172	.0268 (17) p = .459	.2900 (17) p = .129	.3638 (17) p = .076	.5932 (17) p = .006
Q23(PG)	.1034 (17) p = .346	.1797 (17) p = .245	.4366 (17) p = .040	-.2286 (17) p = .189	-.4325 (17) p = .041
Q24(PG)	-.2628 (17) p = .154	-.0422 (17) p = .436	-.1129 (17) p = .333	.3802 (17) p = .066	.4975 (17) p = .021
Q25(KT)	-.0881 (17) p = .368	.3302 (17) p = .098	.1276 (17) p = .313	.4021 (17) p = .055	.3047 (17) p = .117
Q26(RT)	.6108 (17) p = .005	-.1036 (17) p = .346	-.2235 (17) p = .194	-.1317 (17) p = .307	-.1128 (17) p = .333
Q27(L)	-.4615 (17) p = .031	-.3669 (17) p = .074	-.3260 (17) p = .101	.0714 (17) p = .393	.0389 (17) p = .441
Q28(RT)	.5412 (17) p = .012	.0580 (17) p = .413	-.1183 (17) p = .326	-.2009 (17) p = .220	-.1424 (17) p = .293
Q29(PS)	-.46468 (17) p = .030	-.0673 (17) p = .399	.3132 (17) p = .110	.1847 (17) p = .239	-.0156 (17) p = .476
Q30(L)	.3458 (17) p = .087	.1142 (17) p = .331	.1226 (17) p = .320	-.4414 (17) p = .038	-.1280 (17) p = .312

Table 4.2.--Continued.

Item	Subscale				
	RT	PG	L	KT	PS
Q31(PS)	.2125 (17) p = .206	.2604 (17) p = .156	.1141 (17) p = .331	.2716 (17) p = .146	.6894 (17) p = .001
Q32(RT)	.0700 (17) p = .395	.5122 (17) p = .018	.3604 (17) p = .078	.4303 (17) p = .042	.4401 (17) p = .039
Q33(RT)	.4290 (17) p = .043	.5553 (17) p = .010	.3313 (17) p = .097	.0486 (17) p = .427	.0664 (17) p = .400
Q34(PS)	.1185 (17) p = .325	.1215 (17) p = .321	.1976 (17) p = .224	.4696 (17) p = .029	.3501 (17) p = .084
Q35(KT)	.0032 (17) p = .495	.2389 (17) p = .178	.1035 (17) p = .346	.4087 (17) p = .052	.1301 (17) p = .309
Q36(PS)	-.2917 (17) p = .128	-.0185 (17) p = .472	-.0342 (17) p = .448	.7062 (17) p = .001	.6640 (17) p = .002
Q37(RT)	.6006 (17) p = .005	.3983 (17) p = .057	-.0863 (17) p = .371	-.2767 (17) p = .141	.1802 (17) p = .244
Q38(KT)	.2125 (17) p = .206	.1346 (17) p = .303	-.1812 (17) p = .243	-.1759 (17) p = .250	.0596 (17) p = .410
Q39(RT)	.6753 (17) p = .001	.1845 (17) p = .239	- .1774 (17) p = .248	-.1999 (17) p = .221	-.2755 (17) p = .142
Q40(KT)	-.4791 (17) p = .026	-.2266 (17) p = .191	-.0038 (17) p = .494	.5045 (17) p = .019	.1642 (17) p = .264

Table 4.2.--Continued.

Item	Subscale				
	RT	PG	L	KT	PS
Q41(PG)	.5901	.6951	.0999	.1767	.4108
	(17)	(17)	(17)	(17)	(17)
	p = .006	p = .001	p = .351	p = .249	p = .051
Q42(KT)	.3844	.7216	.5013	.4541	.4925
	(17)	(17)	(17)	(17)	(17)
	p = .064	p = .001	p = .020	p = .034	p = .022
Q43(RT)	.6072	.5350	.4100	.1043	.2471
	(17)	(17)	(17)	(17)	(17)
	p = .005	p = .013	p = .051	p = .345	p = .170
Q44(KT)	-.3791	.0683	.0073	.7571	.6056
	(17)	(17)	(17)	(17)	(17)
	p = .067	p = .397	p = .489	p = .000	p = .005
Q45(PG)	-.1508	-.1546	.1352	.4649	.3745
	(17)	(17)	(17)	(17)	(17)
	p = .282	p = .277	p = .302	p = .030	p = .069
Q46(L)	-.2770	-.0336	.5068	-.0543	.0365
	(17)	(17)	(17)	(17)	(17)
	p = .141	p = .449	p = .019	p = .418	p = .445
Q47(PS)	.1088	.1388	-.0998	.0305	-.0162
	(17)	(17)	(17)	(17)	(17)
	p = .339	p = .298	p = .352	p = .454	p = .475
Q48(PS)	-.4146	.1747	.1128	.5498	.5155
	(17)	(17)	(17)	(17)	(17)
	p = .049	p = .251	p = .333	p = .011	p = .017
Q49(PG)	.3402	.5155	.3496	.0075	-.0983
	(17)	(17)	(17)	(17)	(17)
	p = .091	p = .017	p = .084	p = .489	p = .354
Q50(KT)	.1685	.1884	.3160	.4064	.4445
	(17)	(17)	(17)	(17)	(17)
	p = .259	p = .234	p = .108	p = .053	p = .037

Table 4.2.--Continued.

Item	Subscale				
	RT	PG	L	KT	PS
Q51(PG)	.3949 (17) p = .058	.8464 (17) p = .000	.4781 (17) p = .026	.0715 (17) p = .393	.2323 (17) p = .185
Q52(PS)	.5166 (17) p = .017	.5049 (17) p = .019	.2376 (17) p = .179	.1252 (17) p = .316	.4349 (17) p = .041
Q53(KT)	-.4392 (17) p = .039	-.3397 (17) p = .091	.0081 (17) p = .488	.5444 (17) p = .012	.3068 (17) p = .116
Q54(L)	.1538 (17) p = .278	-.0514 (17) p = .422	.2635 (17) p = .153	.2643 (17) p = .153	.2680 (17) p = .149
Q55(KT)	-.1133 (17) p = .333	.2005 (17) p = .220	.0569 (17) p = .414	.7773 (17) p = .000	.6802 (17) p = .001
Q56(KT)	.4094 (17) p = .051	.1510 (17) p = .281	-.0385 (17) p = .442	.5558 (17) p = .010	.2414 (17) p = .175
Q57(PG)	-.2743 (17) p = .143	.0852 (17) p = .373	.0703 (17) p = .394	.7676 (17) p = .000	.6310 (17) p = .003
Q58(RT)	-.2388 (17) p = .178	.0190 (17) p = .471	.1725 (17) p = .254	.0154 (17) p = .477	.2571 (17) p = .160
Q59(PS)	.0730 (17) p = .390	.1160 (17) p = .329	.2771 (17) p = .141	.4724 (17) p = .028	.6273 (17) p = .004
Q60(RT)	.1999 (17) p = .238	.1130 (17) p = .344	-.0314 (17) p = .456	-.4612 (17) p = .042	-.0658 (17) p = .408

Table 4.2.--Continued.

Item	Subscale				
	RT	PG	L	KT	PS
Q61(KT)	.0023 (17) p = .497	.0278 (17) p = .458	.4105 (17) p = .051	.2519 (17) p = .165	.0666 (17) p = .400
Q62(L)	-.1928 (17) p = .229	.2169 (17) p = .201	.4898 (17) p = .023	.3284 (17) p = .099	.3754 (17) p = .069
Q63(PG)	.5168 (16) p = .020	.6004 (16) p = .007	.3196 (16) p = .114	.4638 (16) p = .035	.5604 (16) p = .012
Q64(PS)	.1269 (17) p = .314	.1350 (17) p = .303	.3459 (17) p = .087	.4701 (17) p = .028	.1776 (17) p = .248
Q65(L)	.0840 (14) p = .388	-.0034 (14) p = .495	-.3078 (14) p = .142	.3618 (14) p = .102	.0192 (14) p = .474
Q66(RT)	-.1103 (15) p = .348	-.0163 (15) p = .477	.3809 (15) p = .081	.2573 (15) p = .177	.2455 (15) p = .189
Q67(KT)	.5233 (15) p = .023	.2911 (15) p = .146	-.1153 (15) p = .341	.0337 (15) p = .453	-.0691 (15) p = .403
Q68(PG)	-.0589 (15) p = .417	.0139 (15) p = .480	.0671 (15) p = .406	-.1637 (15) p = .280	-.4374 (15) p = .052

level of correlation between the specific item and the subscale. The second number represents the n, and the third number refers to the Pearson correlation coefficient.

Table 4.3 shows the Pearson correlation coefficient for each subscale as it relates to each other subscale. The abbreviations representing each subscale are listed horizontally and vertically. Each subscale when compared to itself should show a 1.000 correlation.

Table 4.3.--Correlation of the five preliminary scales of the Openness to Learning Scale.

Sub-scale	Subscale				
	RT	PG	L	KT	PS
RT	1.0000 (17) p =	.4601 (17) p = .032	-.0398 (17) p = .440	-.1755 (17) p = .250	-.0029 (17) p = .496
PG	.4601 (17) p = .032	1.0000 (17) p =	.4238 (17) p = .045	.1931 (17) p = .229	.4027 (17) p = .055
L	-.0398 (17) p = .440	.4238 (17) p = .045	1.0000 (17) p =	.1823 (17) p = .242	.2919 (17) p = .128
KT	-.1755 (17) p = .250	.1931 (17) p = .229	.1823 (17) p = .242	1.0000 (17) p =	.6869 (17) p = .001
PS	-.0029 (17) p = .496	.4027 (17) p = .055	.2919 (17) p = .128	.6869 (17) p = .001	1.0000 (17) p =

The data reported in Tables 4.1, 4.2, and 4.3 can be referred to as the scales are discussed individually and in relationship to one another.

A consistent outline will be used to assist the reader with understanding the data and to attempt to report accurately all the data. The reader can refer to the tables throughout the discussions. The outline that was followed in reporting the data is as follows:

I. Discuss the overall alpha of the scale; Gable (1986) recommended an alpha of .7 or above.

II. Report any relatively low or high means and standard deviations.

III. Discuss the corrected item-total correlation (how each item relates to each other item in the scale; .2 is the recommended minimum).

IV. Discuss the alpha if item were deleted.

V. Discuss the Pearson correlation coefficient as it relates to the corrected item-total correlation.

VI. Discuss the scale as it relates to other scales.

VII. Discuss the items and scales when compared to the expert measure and strength scores.

Reliability Data From the Personal Growth Scale

I. The Personal Growth scale had the highest reliability score. The alpha for the original six-item scale was 0.7863.

II. There were no significant variations in the means.

III. The only item that might be in question in this scale is Q49. This particular item did not show as high a relationship to

the other items in the scale. But it was still well over the 0.2 minimum of items that should be used in the instrument.

IV. Item Q49 also is the one item that stands out as an item that, when deleted, might raise the alpha for the scale. The other items were quite consistent in this scale. This item was deleted from the recommended version of the Personal Growth scale.

V. As the corrected item-total correlation was compared with the scores produced by the Pearson correlation coefficient data, which did not delete but included the item, no significant differences were found. Each item carried its highest correlation in its own scale. As the total bank of items was examined, however, three items from other scales correlated higher with the Personal Growth scale than to their own assigned scale: Q1, Q7, and Q42. Item Q63 had a strong correlation to the Personal Growth scale as a binary question (see Table 4.2).

VI. When the Personal Growth scale was compared to the other scales, the Pearson correlation coefficient showed a relationship to three of the four other scales. The Personal Growth scale was related to the Reflective Thought, Listening, and Problem Solving scales equally, with scores ranging from .40 to .46. The one scale that it did not relate to significantly was the Knowledge Transfer scale (see Table 4.3).

VII. As the reliability scores were compared to the expert measurements, the scale items correlated well with no significant differences. When the three items that had shown up on this scale from other scales were compared, it was found that Q1 had been

eliminated because none of the experts had placed the item in the Personal Growth scale. Item Q7 was found to be one of the items that experts split between the Personal Growth scale and the Problem Solving scale. It is possible that Q7 was in the wrong scale. Item Q42 was determined by the experts to be a very strong item, but the location of the item was split. The move of Q42 was further supported because the item correlated strongly with the Personal Growth scale even though the Knowledge Transfer and Personal Growth scales were not related. Item Q42 was included in the recommended version of the Personal Growth scale. Experts reported that Item Q63 was a medium item but that it did belong in the Personal Growth scale.

The Personal Growth scale had a good alpha as it stood at .7863, and the items compared well to the items the experts chose for this scale.

Reliability Data From the Reflective Thought Scale

I. The Reflective Thought scale had the second highest reliability. The alpha for this scale of eight items was 0.7058.

II. The Reflective Thought scale was quite consistent. There were no significant variations in the means.

III. All of the items were well above the suggested .2 correlations. The one item that was questionable was Q33 because it had a correlation of .2352.

IV. The alpha from the item deleted column shows that item Q33 was the furthest away from the rest of the items. It would raise the alpha from .7058 to .7099 if this item were deleted.

V. When the Pearson correlation coefficient was compared with the correct item total, it was found that all of the items on this scale were well within accepted ranges. Through the Pearson correlation coefficient each item was compared to each item as it related to its own scale. Each item in this scale was identified with the Reflective Thought scale. Item Q52 appeared in the Reflective Thought scale with a higher correlation here than in the Problem Solving scale. However, this item does appear in the recommended version of the scale due to its weak alpha.

VI. The only scale that related to Reflective Thought was the Personal Growth scale. It was negatively correlated to the other scales. Even the correlation with the Personal Growth scale was not significantly high. There was a good division.

VII. When the reliability results were compared with the validity results from the experts, the Reflective Thought items all held together very well. All the items had a strength score of 2.5 or above with the exception of Q33. Item Q33 again appeared as questionable, with a strength score of only 2.3. That item was eliminated from the recommended version of the scale.

The Reflective Thought scale held together very well in all areas and came through with a strong field of seven items. Item Q33 was eliminated from the scale.

Reliability Data From the
Knowledge Transfer Scale

I. The Knowledge Transfer scale had the third highest alpha (.6960), which was slightly below the suggested .7. This is a nine-item scale.

II. The item means and standard deviations showed no significant variation. The items seemed to be quite consistent.

III. Close inspection of the corrected item-total correlation revealed some significant differences in the way the items related to one another. The range was from .2171 to .6472. The items were still all above the recommended .2 level of correlation. Items Q55 and Q44 were the ones that stood out in a positive way, with a high level of correlation at .6.

IV. The alpha if item deleted column does not show any significant variance in any particular item. The deletion of item Q50 would only raise the scale alpha from .6960 to .6993.

V. When the Pearson correlation coefficient was compared to the alpha if item deleted, there appeared to be no item that had significant variance in the scores.

VI. The item correlations were compared to their correlations with the other scales through the use of the Pearson correlation coefficient, and items Q42 and Q50 appeared with correlations that were significantly higher as related to other scales rather than their assigned Knowledge Transfer scale. Item Q42 appeared in the Problem Solving scale with a higher correlation, but it also appeared in the Personal Growth scale with a very significant

correlation of .7216. Item Q50 appeared in the Problem Solving scale. However, there was not a significant difference in the correlation, which shows that item Q 50 could probably go in either scale. When the Knowledge Transfer scale was compared to the other scales by the use of the Pearson correlation coefficient, it showed that the Knowledge Transfer scale correlated only to the Problem Solving scale. The correlation was significant with a value of .6869. The Knowledge Transfer scale correlation as compared to the other scales showed each to be under .2. This comparison shows that the scale was significantly different from the Listening, Personal Growth, and Reflective Thought scales. But it also means that there is a high probability that there will be items that show up on both the Problem Solving and the Knowledge Transfer scales. Item Q50 is an example of that.

VII. When the reliability data were compared with the validity data, significant variances appeared again. The scale showed great diversity, which supports an earlier thought that the Knowledge Transfer scale was the least clearly understood by the experts. The strength scores of the items ranged from Q55 with a 1.0 to Q50 and Q56 with a 3.0. This variance was discussed earlier in the discussion of the corrected item-total correlation. When considering content and reliability, Q56, Q44, and Q42 are items that should be kept in this scale. Item Q55 showed significant variance in the experts' view of the item, but it was retained in the recommended version of the scale because of its strong correlation (.6472) to the other items in this scale. The two items

that would raise the alpha most significantly if deleted were Q25 and Q35. Both of these items had been earmarked for elimination after the validity checks and were indeed eliminated. Item Q53 had a low strength score and was slated to be eliminated because of that. However, the reliability data described the item as having a high correlation with the rest of the Knowledge Transfer scale. Based on this information, the item was kept in the scale to see how the scale worked with it included and the others eliminated. This left the Knowledge Transfer scale with six items: Q56, Q44, Q42, Q50, Q53, and Q40.

The Knowledge Transfer scale had a lot of diversity, but the scale was still very close to the .7 alpha that is acceptable for an affective scale.

Reliability Data From the Problem Solving Scale

I. The Problem Solving scale alpha (.5660) was below the .7 recommendation. The seven-item scale had some significant problems in connection with the total scale reliability data.

II. When the item means were compared, there seemed to be no significant variation.

III. When comparing the corrected item-total correlations, there were significant differences in how the items correlated to each other or held together as a scale. Items Q7 and Q52 were well below the recommended value of .20. This supported the deletion of these two items from the recommended version of the scale.

IV. The elimination of Q7 and Q52 raised the probability of a higher alpha for the entire scale.

V. When the alpha if item deleted and the Pearson correlation coefficients of the remaining five items were compared, all of the items appeared to have acceptable scores. When the Pearson correlation coefficient of the items was compared with all items in other scales, two items appeared to correlated with the Problem Solving scale more closely than with their own assigned scale. The items were Q24 and Q59. Item Q24 had a moderately strong correlation, but Q59 had a strong correlation (.6273) to the Problem Solving scale. The previously eliminated items both correlated more closely with other scales. Item Q7 appeared in the Personal Growth scale, and Q52 appeared in the Knowledge Transfer scale. This supported the elimination of these two items. Item Q59 was added to the Problem Solving scale in the recommended version of the scale.

VI. The Problem Solving scale was strongly correlated with the Knowledge Transfer scale, which indicates that the individual items could be closely related to either scale. The Knowledge Transfer scale was positively correlated to a lesser degree with the Personal Growth scale. This indicates that there was some overlap, as was demonstrated by item Q7, which appeared in the Personal Growth scale.

VII. When the five remaining items were compared to the validity data, it appeared that all items were acceptable in the Problem Solving scale. The strength scores ranged from 2.2 to 3.0, which is

a wide range but still within the acceptable range. The focus then became items Q24 and Q59. When the validity check was done, it showed that item Q24 had not been placed in the Problem Solving scale by any experts and that it had received a strength of 2.2. These scores did not form strong support for the inclusion of the item in the Problem Solving scale. On the other hand, item Q59 had an expert strength score of 3.0, and the experts also placed the content of this item in the Problem Solving scale. These data, in addition to the Pearson correlation coefficient scores, produced a strong case for the inclusion of item Q59 in the Problem Solving scale. Item Q24 was eliminated from the recommended version of the scale, and Q59 was included.

Reliability Data From the Listening Scale

I. The Listening scale, consisting of six items, appeared to have some significant challenges. The scale alpha was .4480, well below the recommended .7.

II. The means of this scale seemed to indicate no significant variance.

III. When the corrected item-total correlations were compared to see how the items related to each other item, significant differences were found. Three of the items were below the recommended .2 level. Items Q1, Q6, and Q46 were eliminated because of these data. The remaining items had a fairly good relationship to each other, although the size of the scale was significantly smaller.

IV. The alpha with Q1, Q6, and Q46 individually eliminated was higher than the originally reported alpha. However, it was only shown with one item deleted, which was not significant enough to bring the entire scale up to the necessary level.

V. When the Pearson correlation coefficient scores were compared to the item-deleted scores, the remaining items appeared to belong in the Listening scale, but there may be some question about Q19. Some items that were originally assigned to the Listening scale were eliminated as the computer program deleted negative items. The three items that stood out as medium possibilities for inclusion in the Listening scale are Q12, Q20, and Q23.

VI. The Listening scale was highly correlated to the Personal Growth scale. Item Q23 was located in the Personal Growth scale and appeared as an item that was more highly related to Listening.

VII. When the three remaining items were compared to the validity data, Q5 and Q8 appeared to be agreeable. But Q19 had a questionable strength score of 1.7. Items Q12 and Q20 had no expert support for use in the Listening scale. Item Q23, however, appeared on the Pearson correlation coefficient scale as a Personal Growth item that was more closely correlated with the Listening scale. The item had a high strength score as assigned by the experts. Item Q23 was added to the Listening scale in the recommended version of the scale. Item Q23 is the only item that was moved. Item Q62 appeared with a medium strength in the Listening scale as a binary item. The recommended version of the scale included the three original items

(Q5, Q8, and Q19), as well as the added items Q23 from the Personal Growth scale and Q62, a binary item.

Item Q55 might be one that could be stated positively for future versions of the Openness to Learning Scale. The content is important, as reported by the experts, with a strength score of 3.0, but the stem is negatively stated. Item Q55 was not used. The Listening scale has the least strength as a scale. It has been included in this study but needs further analysis.

Recommended Openness to Learning Scale

When the preliminary instrument was developed, the assumption was that some items would be eliminated throughout the process of instrument construction. The items that would be retained for the recommended scale would be those items that had proven to be the most valid and reliable measures of openness to learning. The data shown in Tables 4.4, 4.5, and 4.6 gave a firm foundation for those items that were to be placed in the recommended scale. A final reliability analysis was done on the items and the scales, incorporating the changes that had been made after the original data and the validity data had been thoroughly assessed and cross-checked.

Each scale included in the recommended Openness to Learning Scale is discussed initially on an individual basis, followed by a discussion of the entire instrument.

Table 4.4 shows the results of the SPSS Reliability analysis for each subscale in the Openness to Learning Scale. The Q listing

to the extreme left refers to the specific item or items being examined. The first column in the table refers to the mean if the item in question were deleted from the subscale. The second column shows the variance in the scale if the item in question were deleted from the subscale. The third column describes how the item in question correlates with the other items in the subscale. A minimum recommended correlation is .2000. The final column provides the alpha for the subscale if the item in question were deleted from the subscale.

Table 4.5 shows the Pearson correlation coefficients for each item in the field-test version of the Openness to Learning Scale. The table demonstrates how each item correlates with each of the five subscales included in the instrument. The letters on the top matrix refer in abbreviated form to the five subscales, and the Q listing on the vertical matrix refers to the number of the items in question and the subscale to which that particular item was assigned. The top number in each column describes numerically the level of correlation between the specific item and the subscale. The second number represents the n, and the third number refers to the Pearson correlation coefficient.

Table 4.6 shows the Pearson correlation coefficient for each subscale as it relates to each other subscale. The abbreviations representing each subscale are listed horizontally and vertically. Each subscale when compared to itself should show a 1.000 correlation.

Table 4.4.--Results of SPSS Reliability analysis for the recommended Openness to Learning Scale.

Item	Subscale Mean if Item Deleted	Subscale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
		Personal Growth Subscale (PG)		
Q2	19.1765	11.6544	.5399	.7516
Q42	19.4706	10.7647	.6844	.7206
Q9	20.0588	10.1838	.4129	.7825
Q41	19.7647	10.4412	.6361	.7227
Q49	19.8824	11.4853	.2743	.8099
Q51	20.4706	7.7647	.8053	.6570
N of cases = 17		Alpha = 0.7784		N of items = 6
		Reflective Thought Subscale (RT)		
Q4	19.1765	18.6544	.2647	.7109
Q16	20.4706	14.8897	.4766	.6619
Q26	20.7059	14.8456	.5047	.6550
Q28	20.1765	15.0294	.4022	.6828
Q37	20.8235	15.2794	.3790	.6889
Q39	20.4706	14.1397	.5805	.6334
Q43	20.4118	15.5074	.3549	.6953
N of cases = 17		Alpha = 0.7099		N of items = 7
		Knowledge Transfer Subscale (KT)		
Q40	21.4118	15.2574	.2912	.7050
Q42	20.2353	17.1912	.3257	.6898
Q44	22.0588	13.0588	.6890	.5899
Q50	20.5294	16.6397	.2298	.7111
Q53	20.7647	14.9412	.3673	.6809
Q55	21.5882	12.8824	.6048	.6089
Q56	20.5882	15.3824	.4220	.6660
N of cases = 17		Alpha = 0.7016		N of items = 7

Table 4.4.--Continued.

Item	Subscale Mean if Item Deleted	Subscale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
		Problem Solving Subscale (PS)		
Q17	16.5294	16.8897	.5963	.6552
Q22	17.8235	15.9044	.2936	.7339
Q31	17.0000	18.7500	.4162	.6985
Q36	17.7059	14.7206	.7900	.5913
Q48	16.8824	17.3603	.3305	.7068
Q59	16.7059	10.5956	.5940	.6445
N of cases = 17		Alpha = 0.7141		N of items = 6
		Listening Subscale (L)		
Q23	15.3529	5.8676	.4086	.5347
Q5	15.1765	7.2794	.1758	.6384
Q62	14.6471	4.7426	.3711	.5871
Q19	16.1176	5.6103	.5247	.4753
Q8	15.4118	6.8824	.4935	.5385
N of cases = 17		Alpha = 0.6117		N of items = 5

Table 4.5.--Individual item correlations for the recommended version of the Openness to Learning Scale.

Item	Subscale				
	RT	PG	L	KT	PS
Q2(PG)	.0899	.6506	.0424	.1077	.2121
	(17)	(17)	(17)	(17)	(17)
	p = .367	p = .002	p = .436	p = .340	p = .207
Q4(RT)	.3698	-.0925	-.1895	.0340	.1112
	(17)	(17)	(17)	(17)	(17)
	p = .072	p = .362	p = .233	p = .449	p = .335
Q5(L)	-.3174	.0627	.4300	.0179	.1538
	(17)	(17)	(17)	(17)	(17)
	p = .107	p = .406	p = .042	p = .473	p = .278
Q8(L)	.0452	.4718	.6312	.0784	.1470
	(17)	(17)	(17)	(17)	(17)
	p = .432	p = .028	p = .003	p = .382	p = .287
Q9(PG)	.3222	.6403	.1323	.0083	.1669
	(17)	(17)	(17)	(17)	(17)
	p = .104	p = .003	p = .306	p = .487	p = .261
Q16(RT)	.6538	.4229	-.2473	-.0793	-.1500
	(17)	(17)	(17)	(17)	(17)
	p = .002	p = .045	p = .169	p = .381	p = .283
Q19(L)	-.1040	.0043	.7281	.1490	.3527
	(17)	(17)	(17)	(17)	(17)
	p = .346	p = .493	p = .000	p = .284	p = .082
Q22(PS)	-.2260	.0322	.1010	.3288	.5662
	(17)	(17)	(17)	(17)	(17)
	p = .191	p = .451	p = .350	p = .099	p = .009
Q23(PG)	.0017	.1614	.6597	-.2590	-.4890
	(17)	(17)	(17)	(17)	(17)
	p = .497	p = .268	p = .002	p = .158	p = .023
Q28(RT)	.6704	-.0623	-.1202	-.1734	-.1147
	(17)	(17)	(17)	(17)	(17)
	p = .002	p = .406	p = .323	p = .253	p = .311

Table 4.5.--Continued.

Item	Subscale				
	RT	PG	L	KT	PS
Q28(RT)	.6108 (17) p = .005	.1278 (17) p = .313	-.2449 (17) p = .172	-.2972 (17) p = .123	-.2380 (17) p = .179
Q31(PS)	.2601 (17) p = .157	.2413 (17) p = .175	.1161 (17) p = .329	.3453 (17) p = .087	.5246 (17) p = .015
Q36(PS)	-.3061 (17) p = .116	-.0296 (17) p = .455	-.0775 (17) p = .384	.6931 (17) p = .001	.8610 (17) p = .000
Q37(RT)	.5907 (17) p = .006	.3757 (17) p = .069	-.1029 (17) p = .347	-.2298 (17) p = .187	.0239 (17) p = .464
Q39(RT)	.7304 (17) p = .000	.2261 (17) p = .191	-.1889 (17) p = .234	-.2349 (17) p = .182	-.3729 (17) p = .070
Q40(KT)	-.5309 (17) p = .014	-.2511 (17) p = .165	-.0410 (17) p = .438	.5333 (17) p = .014	.4096 (17) p = .051
Q41(PG)	.5820 (17) p = .007	.7522 (17) p = .000	-.0537 (17) p = .419	.2148 (17) p = .204	.1026 (17) p = .348
Q42(KT) (PG)	.2738 (17) p = .144	.7748 (17) p = .000	.3443 (17) p = .088	.4610 (17) p = .031	.3221 (17) p = .104
Q43(RT)	.5706 (17) p = .008	.6291 (17) p = .003	.1304 (17) p = .309	.1873 (17) p = .236	.1323 (17) p = .306
Q44(KT)	-.3611 (17) p = .077	.0446 (17) p = .433	-.0082 (17) p = .488	.8053 (17) p = .000	.6679 (17) p = .002

Table 4.5.--Continued.

Item	Subscale				
	RT	PG	L	KT	PS
Q48(PS)	-.4189	.1029	.0213	.4975	.5263
	(17)	(17)	(17)	(17)	(17)
	p = .047	p = .347	p = .468	p = .021	p = .015
Q49(PG)	.1884	.5080	.2644	-.0704	-.1898
	(17)	(17)	(17)	(17)	(17)
	p = .235	p = .019	p = .153	p = .394	p = .233
Q50(KT)	.1952	.2808	.2974	.4386	.2973
	(17)	(17)	(17)	(17)	(17)
	p = .226	p = .137	p = .123	p = .039	p = .123
Q51(PG)	.3182	.8996	.1670	.0531	.0973
	(17)	(17)	(17)	(17)	(17)
	p = .107	p = .000	p = .261	p = .420	p = .355
Q53(KT)	-.4275	-.3879	.1242	.5811	.4372
	(17)	(17)	(17)	(17)	(17)
	p = .043	p = .062	p = .317	p = .007	p = .040
Q55(KT)	-.1082	.2451	-.0678	.7624	.6493
	(17)	(17)	(17)	(17)	(17)
	p = .340	p = .172	p = .398	p = .000	p = .002
Q56(KT)	.3853	.2524	-.1060	.5934	.1752
	(17)	(17)	(17)	(17)	(17)
	p = .063	p = .164	p = .343	p = .006	p = .251
Q59(PS)	.0454	.1345	.2209	.5316	.8243
	(17)	(17)	(17)	(17)	(17)
	p = .431	p = .303	p = .197	p = .014	p = .000
Q62(L)	-.2346	.1258	.7263	.2581	.2872
	(17)	(17)	(17)	(17)	(17)
	p = .182	p = .315	p = .000	p = .159	p = .132

Table 4.6.--Correlation of the five recommended scales of the Openness to Learning Scale.

Sub-scale	Subscale				
	RT	PG	L	KT	PS
RT	1.0000 (17) p =	.4268 (17) p = .044	-.2138 (17) p = .205	-.2031 (17) p = .217	-.1639 (17) p = .265
PG	.4268 (17) p = .044	1.0000 (17) p =	.2173 (17) p = .201	.1463 (17) p = .288	.1433 (17) p = .292
L	-.2138 (17) p = .205	.2173 (17) p = .201	1.0000 (17) p =	.0982 (17) p = .354	.1489 (17) p = .284
KT	-.2031 (17) p = .217	.1463 (17) p = .288	.0982 (17) p = .354	1.0000 (17) p =	.7196 (17) p = .001
PS	-.1639 (17) p = .265	.1433 (17) p = .292	.1489 (17) p = .284	.7196 (17) p = .001	1.0000 (17) p =

The data reported in Tables 4.4, 4.5, and 4.6 can be referred to as each scale is discussed.

Reliability Data From the Personal Growth Scale

The Personal Growth scale was the most reliable in the original data check, with an alpha of 0.7863. The scale was altered to see what would happen if Q42 was added from the Knowledge Transfer scale and Q3 was eliminated because of its split placement by the experts. The scale produced with these variations had a slightly lower alpha (Table 4.4). But the significant change took

place in the Personal Growth scale's relationship to other scales (Table 4.6). In the preliminary data, the Personal Growth scale was equally related to three other scales, and in this recommended scale it was related significantly only to the Reflective Thought scale. This means that the scale changes made it more distinct from the other scales that were being measured. The recommended scale included the following items:

Q2 I continue to learn things about myself.

Q9 I am challenged by the unknown in my future.

Q42 I enjoy exploring new ideas and concepts.

Q41 Transition and change are an important part of my life.

Q51 I am always aware of the balance that exists in my life.

The Personal Growth scale was valid and reliable. The above scale is the one that was used to determine a Personal Growth score for the respondents who were involved in the field-test version of the scale. It is also the scale that was used in the recommended scale that was a result of this study.

Reliability Data From the Reflective Thought Scale

The Reflective Thought scale had the second highest alpha in the original data. The scale was made up of eight items. The alteration that was made was the elimination of item Q33. The new analysis showed that the elimination of Q33 did raise the alpha from .7058 to .7099. It also showed that if Q4 was eliminated, the alpha would go up further to .7109 (Table 4.4). However, the content of

Q4 seemed to be very important to the Reflective Thought scale. The scale that was recommended is the one found in Table 4.4. The Reflective Thought scale was significantly related to the Problem Solving scale, but it was not significantly related to the other scales included in the Openness to Learning Scale (Table 4.6). The items included in the recommended scale are:

Q4 It is important to me to see how the learning relates to my life.

Q16 An important aspect of my approach to learning is to take "time out" to ponder what I am trying to learn.

Q26 The real significance of learning becomes clear to me only after I have had a chance to quietly reflect.

Q28 I learn best from someone who allow me opportunities to periodically stop and reflect on what it is that I am learning.

Q37 I am always considering the relevance of my beliefs.

Q39 Periodic reflection allows me to become more absorbed in my learning.

Q43 I closely monitor myself and assess changes that I need to make.

The Reflective Thought scale is valid and reliable and gives a good feel for what reflective thought means. The scale that has been presented is the one used in determining scores for the field-test version of the Openness to Learning Scale and appears in the recommended scale that was developed from this study.

Reliability Data From the Knowledge Transfer Scale

The Knowledge Transfer scale had an alpha of .6960 in the original analysis. This alpha was slightly below the recommended

alpha. The revisions called for the elimination of Q25 and @35 and to look at the effect that Q55 had on the scale if left in or eliminated. The scale was raised to an alpha of .7016, which put it above the recommended point (Table 4.4). It could be pushed higher if Q50 were eliminated, but the content of this item is important for the scale. The Knowledge Transfer scale showed a close correlation to the Problem Solving scale, but it was easily distinguished from the other scales. The recommended scale included the following seven items:

Q40 I prefer learning situations that reinforce my thinking.

Q42 I enjoy exploring new ideas and concepts.

Q44 I need to have all the information before I make a decision.

Q50 I am challenged by learning situations that are open ended.

Q53 I feel less confident in learning situations that are out of my discipline.

Q55 I like to concentrate my learning efforts in areas that have a direct payback for me.

Q56 I intentionally place myself in learning situations that will stretch and challenge my thoughts and beliefs.

The Knowledge Transfer scale is valid and reliable. It is distinguishable from the other scales in the Openness to Learning Scale. The final scale shown above was used to determine the scores of the respondents in knowledge transfer and is used in the recommended scale.

Reliability Data From the Problem Solving Scale

In the original analysis, the Problem Solving scale had some real challenges. The alpha was only .5660, which showed that the scale was not holding together as a set. The challenge was to see if the scale could be pulled together so that it would distinctly measure problem solving. Items Q7 and Q52 were eliminated, and item Q59 was added. The statistical change in the scale reflecting these changes was significant. The scale had an alpha of .7141 for the six items included. The scale was significantly related to the Knowledge Transfer scale but was very distinguishable from the other scales. The following six items were included in the Problem Solving scale:

Q17 I am adventurous in tackling problems.

Q22 Don't change things that don't need changing.

Q31 When a new approach seems difficult I stick to the status quo.

Q36 I am comfortable knowing and staying with the rules.

Q48 A clear focus on a problem often seems impossible.

Q59 I generally like to:
deviate from the norm keep things the same

The Problem Solving scale is valid and reliable and is distinguishable from the other scales in the Openness to Learning Scale. The above scale was used to determine the scores of the respondents in the field test and makes up the Problem Solving scale for the recommended scale.

Reliability Data From the Listening Scale

The Listening scale was the one scale that showed significant problems in the original analysis. The scale had a very low alpha of .4480. In the revisions of the scale, two additional items--Q23 and Q62--were added to accompany the three items that were left in the scale. This revision reflected a change in the alpha level of the scale to .6117 (Table 4.4). The one thing that was not expected, however, was that one of the items would surface with a corrected item-total correlation under .2. Item Q5 was negatively affecting this scale, and the elimination of this item pushed the scale alpha to .6384. The scale itself was related only slightly to the Personal Growth scale. The remaining problems with the scale were that it was significantly smaller than the other scales and that it was below the recommended alpha level. The abbreviated scale that was used in scoring the field-test versions of the Openness to Learning Scale included the following items:

Q8 I hear complete ideas and information before drawing a conclusion.

Q19 I have completed my interpretation before the speaker is finished.

Q23 I seek out experiences that allow me to learn about myself.

Q62 When speaking with someone I prefer to:
have eye contact not have eye contact

The Listening scale is below the recommended alpha and continues to need some revision if it is to be included in the final version of the Openness to Learning Scale. The scale that was

presented above was used to produce listening scores for the field-test version of the instrument.

The total instrument, as reflected in the data presented, is valid and reliable. It shows distinction between the variables being measured. The one scale that needs further revision is the Listening scale. The other four scales have a firm basis for future use in the recommended scale.

Post-Instrument Results

Thus far, the study has dealt with the instrument concept and item and scale development. A related, but slightly different type of data is addressed in this section. The system that was developed to score and to compare the data collected within the content of the instrument is discussed. This was a necessary step to provide meaningful feedback to the respondents who were involved in the field test and also to investigate further the meaning of the data that had been collected through the field test. The development of a scoring system allowed for comparisons to be made among and between the various subscales, the supervisor ratings, and the self-ratings.

Developing a Scoring System for the Openness to Learning Scale

The preliminary version of the Openness to Learning Scale was mailed to the sample referred to earlier in this chapter. Twenty-two instruments were mailed and 17 were completed and returned within the allotted time. Those 17 instruments provided the data

used for the field test. Two of the remaining instruments were received too late for the statistical analysis, and three were not received.

The instruments were scored by first calculating the total possible for each scale. Since the subscales varied in the number of items included, it was not possible to compare the subscales at this point. The total possible for each subscale was converted to a numeric score on a scale of 1 to 100, which indicated the percentage score. This conversion to a like system made it possible to compare the scores received on the five subscales. The total openness to learning score was calculated by averaging the scores on the five subscales. Table 4.7 shows the calculated scores and can be referred to as the data are further explained.

Table 4.7 displays the scores that each respondent received on each subscale of the Openness to Learning Scale, the total openness to learning score received by each respondent, the score that the supervisor assigned to each respondent, and the score that each respondent gave himself/herself. The scores from the subscales were converted to a 1 to 100 numeric scale, but the self-scores and those assigned by the supervisor are the raw scores from the Likert-type responses.

The subscale scores and the total openness scores were further analyzed to show the distribution of the group frequency and the central tendency. The range was used to describe the group frequency, and the mean and standard deviation were calculated as

measures of central tendency. Both of these score calculations can be referred to in Table 4.8.

Table 4.7.--Calculated scores from the field-test data.

Respondent	Subscale					Total	Supervisor Ratings	Self-Ratings
	PG	PS	L	RT	KT			
1	76	60	60	50	68	62.8	4	5
2	92	68	73	54	71	71.6	4	5
3	80	76	67	71	43	67.4	4	4
4	100	64	87	75	93	83.8	3	5
7	76	48	53	75	64	63.2	4	4
8	76	64	60	64	61	54.0	3	4
9	48	32	27	54	46	41.4	4	4
10	68	72	53	39	61	58.6	3	5
11	72	60	87	54	61	66.8	3	4
12	92	60	33	86	57	65.6	3	5
13	100	40	73	68	46	58.2	4	5
16	68	92	60	32	100	70.4	5	5
18	60	92	53	75	79	71.8	5	4
21	56	64	80	54	57	62.2	4	4
22	76	40	67	43	54	56.0	2	5
23	56	48	53	43	61	52.2	4	3
25	80	68	73	86	89	79.2	4	5

Note: Supervisor ratings and self-ratings are raw scores.

Table 4.8.--Ranges and means from field subscales and total openness scores.

Subscale	Range	Mean
Personal Growth	52.0	75.0
Problem Solving	60.0	61.6
Listening	54.0	62.3
Reflective Thought	54.0	60.2
Knowledge Transfer	57.0	65.4
Total Openness	42.6	64.5

Each of the subscales showed considerable range. This was true for all subscales. The range of the total openness to learning score was, however, less than that of any one of the subscales. This was an expected phenomenon because the averaging of the subscales scores reduces the variance. The group frequency distribution can be seen in Figure 4.3.

Block	Tally	Number	% in
77.4 - 83.8	II	2	0.12
66.9 - 75.3	IIII	4	0.24
58.3 - 66.8	IIIIIII	7	0.41
49.8 - 58.2	III	3	0.17
41.2 - 49.7	I	1	0.06
Class width = 8.5		N = 17	

Figure 4.3: Group frequency and percentage distribution using the converted total openness scores.

Figure 4.3 shows the distribution of converted total openness scores blocked into five groups with the number of subjects in each block. Five blocks were used, to be consistent with the operational definitions of openness to learning created for this study, which consisted of five discrete categories (see pp. 76-77). By dividing the range of converted total openness scores by five, a factor of 8.5 was calculated as the width of each block. Figure 4.3 shows a

near-normal distribution of converted total openness scores for the respondents across these five blocks.

Subscale, total score, and ratings correlation. Now that the scoring system has been developed and supported, we can look at how these scores compare with other scores. The correlations between the subscales, the total openness scores, the supervisor ratings, and the self-score were calculated. These correlations describe the relationship between the subscale scores and the total scores and the supervisor ratings and self-ratings.

When the self-ratings were compared to the subscales and to the total scores, the resulting data showed that the Personal Growth scores were the most closely correlated. (See Table 4.9.) Using .5 as a statistical guideline for the importance of the correlation coefficient, it was apparent that the Personal Growth scale was the only one that displayed an important correlation with self-rating.

Table 4.9.--Self-ratings as compared to subscale scores and total openness scores.

Subscale	Correlation Coefficient	Significance of Correlation Coefficient
Personal Growth	0.583	0.014
Knowledge Transfer	0.335	0.186
Listening	0.167	0.528
Problem Solving	0.137	0.606
Reflective Thought	0.053	0.835
Total score	0.384	0.125

When the supervisor ratings were compared to all other scores, no important correlations were reported. In fact, there seems to be no similarity between the self-rating correlations and the supervisor correlations, as shown by the low negative coefficient. (See Table 4.10.) The data reported in Table 4.10 were the only set of data that had negative correlations. But the negative correlation between the supervisor ratings and the self-ratings may hold some implications for the intimacy of openness to learn.

Table 4.10.--Supervisor ratings as compared to all other scores.

Subscale	Correlation Coefficient	Significance of Correlation Coefficient
Personal Growth	-0.254	0.327
Knowledge Transfer	0.318	0.211
Listening	-0.144	0.586
Problem Solving	0.448	0.069
Reflective Thought	0.019	0.940
Self-ratings	-0.214	0.585
Total score	0.104	0.692

When each subscale was compared to the others, the highest correlation was reported between Problem Solving and Knowledge Transfer. (See Table 4.11.) The table shows that the two important correlations were those between Problem Solving and Knowledge Transfer and between Personal Growth and Reflective Thought. When referring back to Table 4.6, one can see that these correlations were also reported in the reliability data.

Table 4.11.--Subscales as compared to each other subscale.

Subscales	Correlation Coefficient	Significance of Correlation Coefficient
PS and KT	0.604	0.010
PG and RT	0.539	0.024
L and PG	0.425	0.086
KT and L	0.274	0.288
L and PS	0.187	0.522
PG and KT	0.132	0.092
PS and PG	0.028	0.913
KT and RT	0.023	0.928
RT and PS	0.020	0.937
RT and L	0.002	0.989

When the subscales were compared to the total openness to learning scores, all of the subscales with the exception of Reflective Thought showed important correlations. (See Table 4.12.)

Table 4.12.--Total openness compared to all other scores.

Subscale	Correlation Coefficient	Significance of Correlation Coefficient
Personal Growth	0.597	0.011
Knowledge Transfer	0.725	0.001
Listening	0.576	0.015
Problem Solving	0.659	0.004
Reflective Thought	0.461	0.060
Self-ratings	0.384	0.125
Supervisor ratings	0.104	0.692

Table 4.12 shows that the total openness to learning scores calculated from the field-test sample correlated positively to the subscales used. The table also shows all of the scales, with the exception of Reflective Thought, having a significance greater than 0.5. The Reflective Thought coefficient was slightly above the recommended 0.05. When the total openness to learning scores were compared to the self-ratings, the correlation was much weaker. Similarly, correlation with the scores given by the raters was very weak.

Throughout the correlations, the Openness to Learning Scale held together well. The total openness to learning scores did reflect significantly the focus of each of the subscales. The self-ratings and the supervisor ratings, however, showed little relationship to the total score.

Summary

The steps included in the validation process resulted in a much broader understanding of the concept of openness to learning and of the ability to measure that concept with the Openness to Learning Scale. The data collected from the interviews and from the open-ended questions added clarity to the construct as one that is readily recognized and one in which respondents were able and willing to share a great deal of self-interpretation, experience, and personal examples.

The item analysis showed that the instrument itself is a valid and reliable instrument for measuring the construct it was designed

to measure. The one exception is the Listening subscale, which was slightly below standard and needs additional development.

The content data collected from the results of the field test of the instrument showed that the instrument was positively correlated to the total openness to learning scores calculated for the respondents. The outside ratings collected from self-scores and those of the rater were less correlated to the total scores.

The collective data point to an instrument that is measuring what it was designed to measure and is internally reliable, but is not significantly related to the self-scores and supervisor scores reported.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The concept of whether one is open to learn or not grew out of a frustration of attempting to help certain people look at the way in which they were relating to others in an educational setting. It seemed that some educators were significantly concerned with the process that is used to pass on information, educational materials, and concepts, whereas others had very little concern for the process and approached the setting with only the content in mind. This is not to say that information/content is not also of great importance in today's world. To the contrary, perhaps it is so important that special attention needs to be given to the way in which this information is passed to assure its effectiveness. In many cases, the information may be life threatening. Why, then, are there so many people who are unwilling to pay attention to things that will increase their effectiveness, strengthen their relationships, broaden their perspectives, and enhance their being? People who are open to learn are granting themselves a way of life that can be full of challenges, changes, and experiences that can continue to promote their personal growth and in turn promote the personal and professional growth of the people with whom they work.

This study was clearly exploratory in nature because there was no predetermined knowledge on which to base the research. Bits and pieces had to be drawn from many sources. The study began with a concept in mind, and the challenge was to move that concept to a point of understanding and application. It is easy to say that one is not open to learn, and such a broad statement can easily be overlooked, misunderstood, or ignored. It is another matter to assist one in examining the ways in which one learns and in determining what might help to expand that capacity to learn. The exploratory portion of this study allowed the concept to become more concrete with specifics that could be identified, talked about, and measured.

The information-gathering section of this study led to the establishment of a data base that can be expanded for many years. The concept was not one with which people were particularly unfamiliar. It was one, however, that had never been explored with them. It did not take long for people to realize that they did have some specific beliefs about the concept and that those beliefs were operating when they were in the role of learner or educator. A person who is open to learn has to be willing to receive information either through observation or through listening. One must be willing to examine self, to change self, to change circumstances, and to plan change or to be proactive about change. Being open to learn means being able to entertain an idea. The person who is open to learn is in a constant state of development/improvement/growth and sees the advantages in expanding one's self.

Participants in the interviews admitted that they were more open to learn when they were around others who were open to learn. They were able to describe those people as safe, accepting, and able to establish a relaxed and unrestricted feeling about learning. Respondents described the things they liked most about themselves as learners as a willingness to learn, to try, to listen, and to persevere. They liked their ability to adapt quickly and to relate ideas to existing knowledge so as to make the changes necessary to relate to their environment.

A good educator was described as one who focuses on the needs of the learner and acts as a role model for the learner. The thing that they liked most about themselves as educators was their ability to involve others in the learning process and to share their enthusiasm for learning with the learner.

Respondents shared a great deal of information to contribute to this study and did it in a manner that seemed to convey their enthusiasm for the topic. There was almost a sense of joy and excitement in many of the descriptions.

The literature review revealed an adequate amount of information concerning openness and a wealth of data concerning learning. The literature on openness dealt with a person's openness to many things such as experience, and although there was considerable mention of learning in passing, no real attention was paid to one's openness to learn. It was as though one's openness to learn is assumed. Can one assume that people are open to learn

whatever it is that educators plan to teach? This may be true in the early years of one's education. The educator picks out the things that will be of value for the learner and goes about teaching those things. Learners seem to be willing to stick with this plan until they have the content they believe is necessary for them to complete their learning journey, but then something happens. The learner begins to make decisions for himself/herself. At this point the educator cannot assume that the learner is eagerly awaiting the things the educator has planned to teach.

The first and most basic question is whether the learner is willing or open to learn anything and, second, whether he/she is willing or open to deal with the topic at hand. Combining the pools of literature about the adult as a learner, openness, and openness to experiences allowed for the development of the construct for this study. The literature from education, psychology, and learning theory allowed the construct to become more alive with the specifics of how a person who is open to learn might look or act. Describing the person who is open to learn provided the basis for the development of the constructs that would be included for measurement. Five constructs tend to make a difference in people's openness to learning. If individuals are concerned with their own personal growth, they tend to be more open to learn. They are more open if they are good problem solvers and if they are able to transfer knowledge from one situation to another. People who are open to learn are good active listeners and listen for concepts and ideas that help them gain a broader view. People who are open to

learn spend some time thinking about what it is that has been learned and how it might apply to life situations by the use of reflective thought. The literature provided specific behaviors that accompany these constructs. Through identifying the behaviors an individual displays when involved with one or more of the constructs in question, it became possible to focus more directly on the identification of the person who is open learn and on the actual development of an instrument with which to measure this openness to learning.

The development of the Openness to Learning Scale was a long but extremely enlightening process. The steps were well defined by the literature and gathered clarity as the process progressed. Perhaps the most difficult concept to keep in mind was that instrument development, and not the information gathered through the use of the instrument, was the number one priority. The tendency in any methodological study is to jump ahead to the implications of the content.

Instrument development began with the establishment of a scale that matched each of the constructs. The listening construct was not one that was developed through the literature review; it was added as a result of the concern for listening that was expressed by the interviewees. The specific behaviors being looked for were converted to either Likert-type or binary statements to which respondents could select the response that was most like them. The open-ended questions were added to the field-test instrument to

gather additional information that would add to the understanding of the concept. The demographics were added to provide clarity to the descriptions of the field-test population.

The expert panel served a vital role in determining the content validity of the instrument. Having the experts focus on the content of each statement and its strength as a measurement of that content established a standard for selection of the final items that would be recommended for the instrument. If the items passed the statistical tests and also those of the experts, they were considered strong items.

The supervisor rating method was used to measure the total openness to learning score against the score that was calculated from the instrument and the self-scores that each respondent reported.

The statistical analysis of the items gave a clear indication of how the subscales that had been established were measured and reacted as a group. The reliability data provided measures of central tendency (subscale means if item was deleted--Table 4.4), data that provided measurement of the strength of the relationship of each item to the subscale (corrected item-total correlation--Table 4.4), and data that indicated the strength of the relationship and discreteness between the subscales (Table 4.6). These reliability data were compared to the content validity that the experts had provided for each item. Each scale was individually examined, and each item within that scale was examined for its effectiveness in measuring openness to learning.

Once the best subscales had been determined, the data collected from each respondent through the field test were scored. The original instrument contained 68 items, but only 29 of those items were used in the actual scoring of the subjects and transferred to the recommended scale.

The content from the instruments was also evaluated. Scores were calculated for each respondent and related back to the five working definitions that had been established for this study. Each respondent was given feedback on his/her individual score and how that score could be compared to the scores of the other individuals in the field-test sample.

The final step was to develop the Openness to Learning Scale that would be recommended for further study. This recommended version of the instrument can be further developed through the use of additional populations and further statistical analyses.

Conclusions

The formal system of education in the United States fosters the image that education is learning the things that others present. There is often the view that very little choice is made by the learner at any stage of the process. The learner, in many cases left with only one choice, may or may not exercise that choice. The learner can either learn or not learn. Some discover that this choice is available early on in their career as a learner. Others do not realize that they have a choice until much later in that career as a learner.

By the time a learner exercises this choice, many events may have taken place that reinforce the learner's lack of openness to learn. On the other hand, those who have developed an openness to learning are continuing to discover both personally and professionally. Historically, most research has focused on the learner-teacher interaction once the learning situation has been established. This research, however, assumed that the learner's receptivity is the key to learning. It is a step in the learning process that has received very little direct attention.

The relevance of this study deals with this most basic question regarding the learner. Is he/she open to learn? Are specific characteristics and behaviors displayed by people who are open to learn? Can these specific variables be measured within individuals, presented to the individuals, and discussed openly? Will the awareness of one's own openness to learning help foster awareness within the learners with whom one is working? Are there behaviors a learner can focus on if he/she wishes to become more open? Is a person who approaches life with a philosophy of being an open to learn person a more effective educator?

These questions were addressed in the present study. Although it did not provide all the answers necessary for a complete understanding of openness to learning, it did raise the awareness of a concept that is familiar to educators and learners. It established a philosophical and literature base for the further development and understanding of the concept of openness to

learning. It has taken the next step and put the philosophical base into a practical, applicable format so that the concept can be discussed and evaluated by many groups of learners and educators.

Conclusions Regarding the Concept of Openness to Learning

The concept of openness to learning was easily recognized by experts, interviewees, and respondents. Even though most had never been asked specifically about the concept, they were quick to realize that they had some specific opinions regarding the concept. Their experiences as learners seemed to be the first referent; the second referent was their experiences as educators. The concept of openness to learning is a part of people's experiences, is readily recognizable, and is worthy of more universal understanding. It is something that people apply unknowingly. But, when asked, people can describe others who they think are open to learn, situations that lend themselves to open learning, things that stop one from being open to learn, and examples of one's own openness to learn. Considering that the concept is so much a part of each learner provides important evidence that the concept should be developed, talked about, and used to promote more effective learning and teaching.

The data collected confirm that being open to learn reflects a proactive approach to life. A proactive approach is one that is constantly reflecting on what has been learned, integrating that acquired knowledge, and planning for additional change and personal growth. Being proactive suggests that these things are planned in a

perpetual state of evolution so that things are in progress before a need arises. In many cases, planning is not directly connected to need but is motivated by this proactive approach to personal growth. The descriptions indicate that being open to learn helps people feel good and excited. These results imply that being open to learn has a positive influence on one's attitudes relating to planned change and willingness to investigate new possibilities.

There was a very strong response which indicated that participants preferred to be around people who are open to learn. Being open to learn was identified as being a positive and desirable behavior to have within oneself and also in those around us. The descriptions indicate that being open to learn helps people feel good and excited about themselves and learning.

The Openness to Learning Scale has generated a great deal of interest in the concept and in possibilities for instrument use. The application of the concept seems to raise "A-haas" with educators, who immediately relate the usefulness within their particular profession. The student's openness to learn is a topic that is very important to educators, but it has either been assumed or ignored because of the lack of clarity surrounding the concept. Further understanding of the concept will allow for a more direct approach concerning openness to learning.

Conclusions Regarding the Openness to Learning Instrument

The purpose of the Openness to Learning instrument is to create an atmosphere in which the learner's openness to learning can be

self-interpreted and discussed. The constructs involved can be introduced through the use of a scale such as this one. And the effects of those constructs on one's openness to learning can be examined and reflected upon. It is extremely important to understand that the development of the instrument in this study is exploratory and evolving. Next steps become critical in instrument development. That next step involves a factor analysis. The factor analysis is conducted to examine the construct validity of the Openness to Learning Scale. The researcher and the content experts in this study explored and specified the universe of content that is to be measured by the Openness to Learning Scale. The factor analysis will allow the scale to be rated by the respondents and that respondent rating to be translated into an empirical relationship among the items. Through examination of this empirical relationship, one will be able to determine whether the derived factors actually represent the concepts and resulting constructs.

The factor analysis requires that the recommended scale be administered to a population six to ten times larger than the number of items in the scale. Thus, the field-test population should have an $\underline{n}$ of at least 180 with 30 items and ideally 300 or more. The data collected from this large number of respondents will allow for the necessary examination of resulting correlations between items.

The use of the supervisor ratings was chosen as a part of the external evaluations of the Openness to Learning Scale. However, the low and in some cases negative correlations (Table 4.10) that

were produced lead one to conclude that this approach did not work. Further investigation might show a lack of clear communication of the concept to the supervisor or simply a poor choice of methods for this particular research. The implications at this stage of the study are not clear.

However, the Openness to Learning instrument itself, through use of experts and field testing, showed the preliminary stages of validity and reliability. The validation steps involving the experts and the literature supported that the content was measuring what the established working construct and definitions were intended to measure. The statistical analyses for reliability confirmed four of the five scales as distinct and definable constructs with significant alphas. The one exception was the Listening scale, which demonstrated some difficulty in reliability. Caution, however, is indicated with respect to drawing significant meaning from the findings at this stage of the instrument development.

Perhaps the most important conclusion to be drawn in this study involves the recognition that this is not the conclusion. The report made available in this paper is concluded, but the research is in its initial stages. A firm foundation has been developed for further data gathering and analysis. Instrument development itself is a dynamic process that can and should be in a continual stage of reevaluation, revision, and refinement. The Openness to Learning Scale has begun this process.

Another important consideration is the interest centered on the construct developed in this study and the resulting instrument.

Some of that interest is within the field of education, and some is on the fringes. A number of inquiries have been made about the use of the instrument as a possible assessment tool. This could be cause for concern because often those who are accustomed to dealing with cognitive measures do not understand affective instruments. Affective instruments should not be used in ways similar to those of cognitive instruments. When affective instruments are used in such a manner, a Type II error is committed. This occurs when an instrument designed to measure one set of variables is used to make decisions about an entirely different set of variables. The Openness to Learning Scale was developed as a self-awareness and teaching tool, not as a personnel assessment instrument. Very deliberate and careful educational steps must be taken to insure that the Openness to Learning Scale will not be used as an assessment instrument.

The Openness to Learning Scale was developed with some of the logistics of an adult learning setting in mind. The instrument is user friendly. It is relatively brief, easy to use, and can be self-administered as well as self-scoring. These considerations should allow the concept to become more commonly addressed and understood in the initial stages of the learning setting.

The instrument provided insights into the respondents as learners and provided respondents with insights into themselves as learners. The information that the Openness to Learning Scale provided about the small group of respondents used in the field test

was interesting and could prove to be very valuable to an educator working with this particular group in a learning setting. The scores could provide a way to discuss specific variables, which could foster the awareness and understanding of the concept of openness to learning.

The Openness to Learning Scale can be used as a part of a proactive approach to dealing with the threat and risk of learning and change. Cross (1981) cited fear as one of the major distractions from learning. The instrument provides valid and reliable means for discussion of the topic of one's openness to learning, is reasonable in length, and is easily understood. It has been proven repeatedly that information does not change behavior, but perhaps specific discussions of openness to learning will promote an understanding in a nonthreatening manner and encourage behavioral change.

Conclusions Regarding the Field-Test Data

A constant concern with affective instruments involves the phenomenon that causes respondents to respond in a way that they think they "should," rather than how they "truly" are. Part of it centers on a concern for doing the "right" thing, and part of it has to do with not being honest with oneself. This phenomenon of a self-fulfilling prophecy should be carefully monitored with future use of the Openness to Learning Scale, and the name of the instrument should be changed to make it less descriptive of the concept being measured. The field-test scores showed that six

respondents were above the mean and four below the mean on the Openness to Learning Scale (Table 4.8). Only one of the respondents gave himself/herself a mean score on the self-ratings. This indicates that 94% of the respondents gave themselves higher openness to learning self-rated scores than they scored on the instrument. One of the reasons for this may be that openness to learning has been identified as positive and desirable. Therefore, one is not likely to give oneself a low score. In addition, the people in this field sample were educators and "knew what should be." It set up a situation in which they might have been less than honest with themselves and responded the way they thought they should.

One's openness to learning may be a very private/intimate part of learning. The negative correlations between the self-ratings and those given by the supervisor (Table 4.10) and the high correlation between the Personal Growth scores and the self-ratings (Table 4.9) might indicate that only the learner knows how open to learn he/she is. Learners are constantly making either conscious or subconscious decisions as to whether to integrate knowledge into their own system. Further understanding of the concept will allow for a more direct approach concerning this intimate side of learning.

The openness to learning scores indicated that respondents did show measurable differences among the constructs. These constructs can be measured. Further, the Openness to Learning Scale showed the bulk of the respondents in the average range, below their

self-ratings. This scoring may indicate that the respondents might not have been as aware of the constructs involved in openness as they thought they were. This supports the rationale that discussion centering on the constructs used in the Openness to Learning Scale can give the respondent some specific constructs on which he/she can reflect concerning his/her own openness to learn.

The next sampling of the Openness to Learning Scale should begin to focus on the content of the data collected from the instrument, as well as the instrument itself.

Recommendations

This study has shown that the concept of one's openness to learning is intriguing, complex, and enjoyable for the respondents and for the researcher. It has uncovered variables that people might not have devoted much time or energy to considering, but that are central to the themes of education and learning. With these thoughts in mind, the following recommendations are made, most of which refer to further development of the concept of openness to learn and further development of the Openness to Learning Scale, which provides a basis for examining the concept.

Recommendations Regarding the Concept of Openness to Learning

This study has provided the base for the further development of the concept of openness to learning. It is recommended that the data base for the concept of openness to learning continue to be developed, examined, and refined. The basis is within this study.

Parameters have been established, and some important variables have been tested. However, there may be additional variables that can provide further insight into the concept. The next step might be to gather information from a wider base of respondents, perhaps from representatives groups of populations such as learners, teachers, and/or administrators. A further recommendation is that the concept be kept very broad. The Openness to Learning Scale may be altered to fit a particular group, but the underlying concept should not be narrowed. In fact, consideration should be given to expanding the concept. Inquiries have been made as to the use of the instrument. These inquiries have ranged from use with professional scientists to use with people who are grossly obese. A serious question with either audience in the broadest sense is how the learner conceives his/her own openness to learn.

Recommendations Regarding the Openness to Learning Scale

One of the main sources of instrument error, according to Gable (1986), is the inadequate sampling of items. When there are not enough items to represent the domain, the probability of the respondents having an adequate chance to agree goes down. The Openness to Learning Scale seemed to have an adequate number of items to provide the selection of the items with the most strength. However, a pool of items should be developed for future use. Additional forms of the instrument can be developed, and tested items can be substituted when needed. The tested items can be reworded without changing the item stems. This will help create

additional items. Items can also be created that parallel the existing items that have the best item/scale correlation. This does not change the content, but it could raise reliability levels to strengthen the instrument. This is especially needed in the case of the Listening scale. The Listening scale needs additional items to improve validity and reliability. By rewording some of the items and adding additional items, the Listening scale can be tested once again for reliability.

Two subscales in the recommended version of the scale had several items that were negatively stated. Negative items create additional challenges in figuring the alpha of a scale and also in instrument scoring. Each time there is an item that is negatively stated, it must be reversed when considering the results. The Openness to Learning Scale would become less difficult to handle if the negative items were reconsidered. It may be possible to restate some of the items in a positive way without changing the stem.

Recommendations:

1. Develop additional items that are parallel with the best items.
2. Begin to form a pool of items for future use.
3. Reword negative items to be positive without changing the stem of the item.

The sample size is something that should be discussed for the next steps in the process. Gable (1986) suggested that the sample size be six to ten times as many people as there are items.

However, he went on to say: "The real issue is not the number of people but the representativeness of the response patterns compared to those of the large population from which you have sampled" (p. 174).

The sample used in this study was small, but it was representative of the population. Further, the object of the study was to run an item analysis to identify items of strength and items to be deleted. The next step, then, is to use a large sample and do a factor analysis based on the results.

Recommendation:

4. A sample with six to ten times the number of items included in the instrument should be used, and a factor analysis should be done following the administration of the instrument.

Along with the use of a larger sample, more data can be gathered from the content of the instrument to begin to establish profiles of the respondents. The working definitions that were developed are a good starting point, but they will need revising and refining as they are expanded to incorporate additional data.

Recommendation:

5. Data more accurately describing the respondents can be integrated to refine descriptions.

The following recommendations address the use of the Openness to Learning Scale as an affective instrument that has been designed as an educational tool. To insure that the instrument is used in this way, specific steps should be taken.

Recommendations:

6. The user's guide should include a section on the use of affective instruments.
7. Whenever possible, the use of affective instruments in general should be discussed as an educational opportunity.
8. This instrument should be specifically promoted as an educational tool.

This instrument provides a good base from which to begin to study the concept of openness to learning, but refinement is needed in the instrument.

Recommendations:

9. Further development and data gathering should be done on the instrument before it is widely used.
10. Additional outside validation methods (like the outside rater) should be explored.

Recommendations Regarding Field Tests of the Openness to Learning Scale

The next field test of the instrument should include a much larger sample. The instrument used should include only the items that are on the recommended scale or those constructed closely relating to the scale items. This recommended scale will not be nearly as time consuming as the original instrument and will effectively reflect the research to date. However, the open-ended questions elicited very important and insightful data.

Recommendation:

11. The open-ended questions should be included in the next field test.

Postscript

The development of the Openness to Learning Scale has been rewarding, all-consuming, tiring, educational, enlightening, and fun. Developing a concept toward understanding and following it through to practical application is a very rewarding process. It is tiring in that it takes all of one's energy to think about something so fully. It is educational in that every step of the way is an open-ended learning experience with many challenges. It was enlightening in that some of the feelings and intuitions that had lingered for some time have now been resolved. And last but not least, it was fun. It is fun to become so involved in something that nothing else seems to exist, and to find new interests in areas that once held mystery and even fear. Being open to learn creates positive feelings about self and enthusiasm for <u>still more learning</u>.

APPENDICES

APPENDIX A

PRELIMINARY INTERVIEW FORM

GUIDELINE QUESTIONS FOR PRELIMINARY OPENNESS TO LEARNING INTERVIEWS

What does being "open to learn" mean to you?

Can you think of times when you are more open to learn?

Are there times when you are less open to learn?

If I were watching you when you were "more" open to learn, what behaviors or characteristics would I observe?

If I were watching you when you were "less" open to learn, what behaviors or characteristics might I observe?

How do you feel when you are open to learn?

How do you feel when you are not open to learn?

When I ask you to name someone who is "open to learn," what is the first qualification that you think of? Is it easy to think of someone?

How broad a term is "open to learn"?

Are there things that happen around you that quickly open you up to learning?

How do you determine if you are going to be open or not?

On a scale from 1 to 5, rate yourself as to your own openness to learning (5 being high)

1	2	3	4	5
not open		moderately open		extremely open

Interpret this rating for me. How open are you and to what?

APPENDIX B

BEHAVIORAL CHART OF HIGH AND LOW ATTRIBUTES DIVIDED BY VARIABLE CHARACTERISTIC

Behavioral Chart

Characteristic	High	Low	Source
	Transfer of Prior Knowledge		
Adapt	Know how to learn	Devastated	Naisbitt p. 133
Flexible	Open	Not open	"
Study new field	Know how to learn	Stay narrow	"
Learn how to learn	Humility	Know all	"
"	Suspend judgment	Judgmental	"
Tap into prior knowledge	Improved recall	Temporary recall	Rembold p. 5
"	Learn ideas/ concepts	Learn information	"
"	Connect to real world	Isolated information	"
"	Connect new info to old	See no connection	"
If expert and can tap knowledge	More and better options to act on info	Fewer options to act on info	" p. 9
Transfer info	Increase spontaneity	Drops off	p. 10
Age independent			p. 11
Tap into info	Selectively encode Selective combinations Selective comparison	Less	p. 15
"	Make inferences generate info	Fewer inferences	Glaser p. 101

Characteristic	High	Low	Source
Lack prior knowledge		Revert to old ways	Glaser
Expert	Knowl. abstract/ principles	Organ. around	p. 98
	Problem Solving		
Good problem solving	More conscious	Less awareness	p. 95
"	More use of active self-monitoring	Less monitoring	"
"	Can state problems	Have trouble seeing	"
"	Look new ways	Revert to old ways	"
"	Integrated approach	Specialized approach	p. 97
"	Can pick important info	Can't pick info	p. 98
"	Much knowledge	Lack of knowledge	p. 99
"	Integrate info	No integration	p. 100
"	Understand in terms of prior knowledge	Isolated	p. 100
"	Will look at beliefs	Will not look at beliefs	Rokeach
"	Ability to synthesize	Trouble synthesizing	"
"	Equal in analysis	Analysis	"
"	Open	Threatened	"

Characteristic	High	Low	Source
Good problem solving	Faster at process	Hard to remember beliefs to be integrated	Rokeach
"	Many experiences	Lack of experiences	"
"	Like new systems	Dislike new systems	"
"	Beliefs integrated	Beliefs isolated	"
"	Likes to play with ideas	Doesn't like new ideas	"
"	Not defensive	Defensive	p. 177
"	Likes new ideas	Resists new ideas	"
"	Enjoys work on problems	Does not enjoy problems	"
"	Sees complexity	Tries to simplify	p. 178
"	Rules change	Stick with rules	"
"	enjoy other things (music)	Enjoy certain things	p. 289
"	Independent	Dependent (needs conformation); looks right-wrong	p. 180
	Listening		
Learning	Listening	Talking	Johnson
Good listener	Understanding attitude	Judgmental	Robinson
"	Works at list.	Says easy	"

Characteristic	High	Low	Source
Good listener	Hears ideas/ concepts	Hears words	Robinson
"	Gives attention	Lacks attention	"
"	Hears full idea	Stops people	Strengel
"	Clarify self	No connection	"
"	Ego "ok"	Defensive	Montgomery
"	Likes to hear ideas	Own ideas	"
"	Desire to listen	Too busy	Dewey
"	Respects others	No use for	"
"	See complexity	Simplify	Montgomery
"	Understand comm.	Lack knowledge	p. 6
"	No filters	Judgmental	p. 8
"	Give active response	Not active	"
"	Asks for clarification	Tell/advice	"
"	Question/openness		p. 209
"	Eye contact	No contact	p. 134
	Reflective Thought		
Reflective thought	Active, persistent; careful consideration of beliefs	Belief unquestioned	Dewey p. 9
"	Inquiry into belief	Belief unquestioned	"

Characteristic	High	Low	Source
Reflective thought	Reason	Implicit faith	Locke
"	Other's reasons	Own passion	"
"	Full view	Limited view	"
"	Freedom from prejudice	Prejudice	"
"	Entertain ideas	Unwilling	Dewey
"	Learn self	Dependent	Schon
"	Open to challenge	Not open to challenge	"
"	Diverge from ordinary	Stay with patterns	Rogers
"	Internal evaluation	External evaluation	"
"	Open to self	Trying to please	"
"	More creative	Less creative	"
"	Facilitation	Telling	p. 106
"	Realness	Little empathy	p. 113
"	Available	Not available	p. 132
"	Desire to learn	No desire	p. 158
"	Integrates subject	Sees no value	"
"	Will change oneself	Resists change	p. 159
"	Less threatened	More threat to self	p. 161
"	Learn quickly	Slower process	p. 158

Characteristic	High	Low	Source
Reflective thought	Willing to participate	Reluctant	Dewey p. 162
"	Proactive/ deliberate	Reactive	p. 17
"	Enrich	Control	p. 21
"	Whole-hearted	Not interested	p. 31
"	Responsible	Profess to belief but not to consequence	"
"	Greater number and range of suggestions		p. 43
"	More depth/profundity		p. 44
"	Thinking specific/ order		p. 46
"	Judging others from self		"
"	Tolerant of ambiguity	Not tolerant	Hart
"	Reflective thinker	Defensive about tradition	"
	Personal Growth		
Concern for personal growth	Honest with self	Avoid	Sheehy p. 15
"	Satisfied with self	Not satisfied	"
"	Ambitious	Less concerned	"

Characteristic	High	Low	Source
Concern for personal growth	Open to experience	Reluctant	Sheehy p. 15
"	Playful about self	Not playful	"
"	Open to learn about self	Avoid	"
"	Don't depend on society	Depend on society	"
"	Physically fit	Less concerned	"
"	Holistic approach	Sees parts	Rogers
"	Trust self/relationships	Look outward	p. 290
"	Adjusts to conditions	Resists	"
"	Self-confident	Not confident	"

APPENDIX C

EXPERT RATING FORMS

Dear Reviewer,

Thank you so very much for agreeing to share your input toward the development of the Openness to Learning Scale. Your responses will be combined with those of your colleagues and will be very seriously considered in the development of the completed version of the scale to be used in this study. Your time and attention are extremely appreciated and valued.

THE CONCEPT OF OPENNESS TO LEARNING

The concept of "openness to learning" is one which borrows research findings from education, psychology, and learning theory to describe:

The person who is open to his/her learning and who does not lose sight of his/her own capacity to grow. The person who is "open to learn" approaches personal learning and the learning of others in a proactive, holistic manner. This approach expands the potential for self-awareness in areas beyond those that are apparent. The "open to learn" person is one who reserves the right to seek options, opportunities, and environments that challenge the thought processes. The Openness to Learning Scale is being designed to begin to better understand the concept of an individual's "openness to learning" and the possible influence that this concept may have on the professional educator.

You will find enclosed a copy of the Openness to Learning Scale and a Reviewer's Response Sheet. The intent is not to have you respond to the items per se, although you may if you wish, but to have you respond in two ways to each item.

1. Using the concept described above, determine if each item is a WEAK -- MEDIUM-- STRONG measure of this "openness to learning" concept.

2. Determine one of the five areas that you feel the item best measures.

    a. Listening
    b. Knowledge transfer
    c. Problem solving
    d. Reflective thought
    e. Personal growth
    f. None of the above

Page 9 of the instrument has questions that require a written answer. Please write your comments on the instrument for these items.

Please feel free to make any additional comments or suggestions. I will be looking forward to our appointment to discuss your responses.

Thank you once again for your willingness to share your expertise.

Sincerely,

Nicky Hoffman
Staff Development Specialist, CES
410 Ag Hall
355-6580

REVIEWER'S RESPONSE SHEET

CIRCLE TWO RESPONSES FOR EACH ITEM.

Place a value on the strength of the item's measurement of "openness to learning."

1	2	3
Weak	Medium	Strong

Into which of the six areas listed does the item best fit?

a. Listening--listen
b. Knowledge transfer--know trans
c. Problem solving--prob solv
d. Reflective thought--ref tho
e. Personal growth--pers gwth
f. None--0

Item 1-1 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-3 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-7 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-3 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-5 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-9 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-3 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-7 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-9 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-9 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-1 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-12 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-11 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-1 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-10 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-9 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-5 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-4 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-9 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-2 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-7 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-5 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-5 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-14 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-10 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-10 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-1 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-7 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-14 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-7 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-3 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-6 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-2 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-11 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-5 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-2 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-3 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-10 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-6 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-10 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-8 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-6 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-6 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-8 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-4 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-8 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-8 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-11 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-2 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-6 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-4 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-1 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-2 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-13 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-4 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-11 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-12 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-4 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-13 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-8 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-15 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 6-1 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 6-2 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 6-3 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-13 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-15 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-15 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-17 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-12 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-12 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 3-15 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 5-11 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 2-14 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 4-16 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

Item 1-13 Value item measurement:

1	2	3
Weak	Medium	Strong

Area in which item best fits:

listen / know trans / prob solv / ref tho / pers gwth / 0

OPENNESS TO LEARNING SCALE

1-1 I continue to learn things about myself.

1 2 3 4 5
least like me most like me

2-3 I am always considering the relevance of my beliefs.

1 2 3 4 5
least like me most like me

5-7 I have completed my interpretation before the speaker is finished.

1 2 3 4 5
least like me most like me

1-3 I would describe myself as an honest person.

1 2 3 4 5
least like me most like me

3-5 When a new approach seems difficult I stick with the status quo.

1 2 3 4 5
least like me most like me

4-9 The problem is that I have trouble narrowing my learning focus because I am interested in so many things.

1 2 3 4 5
least like me most like me

5-3 I work hard at understanding what is said to me.

1 2 3 4 5
least like me most like me

1-7 I am challenged by the unknown in my future.

1 2 3 4 5
least like me most like me

2-9 It is important to me to see how the learning relates to my life.

1 2 3 4 5
least like me most like me

5-9 I make communications more efficient by clarifying for the other person.

1 2 3 4 5
least like me most like me

4-1 I enjoy exploring ideas and concepts.

1 2 3 4 5
least like me most like me

2-12 I learn best from someone who allows me opportunities to periodically stop and reflect on what it is that I am learning.

1 2 3 4 5
least like me most like me

3-11 A clear focus on the problem often seems impossible.

1 2 3 4 5
least like me most like me

5-1 I give an individual my full attention when speaking to me.

1 2 3 4 5
least like me most like me

2-10 The real significance of learning becomes clear to me only after I have had a chance to quietly reflect.

1 2 3 4 5
least like me most like me

3-9 I am in a constant search of personal experiences and adventures for myself.

1 2 3 4 5
least like me most like me

4-5 I love to hear lots of opinions on a topic.

1 2 3 4 5
least like me most like me

1-4 I seek out experiences that allow me to learn about myself.

1 2 3 4 5
least like me most like me

1-9 Transitions and change are an important part of my life.

1 2 3 4 5
least like me most like me

3-2 I enjoy playing with new ideas---What if?

1 2 3 4 5
least like me most like me

4-7 I feel humble in learning situations that are out of my discipline.

1 2 3 4 5
least like me most like me

5-5 I encourage others to express their opinions.

1 2 3 4 5
least like me most like me

2-5 I closely monitor myself and assess changes that I need to make.

1 2 3 4 5
least like me most like me

3-14 I am surprised to find the answer to one problem in the context of a totally different problem.

1 2 3 4 5
least like me most like me

5-10 I deal with the topic at hand during a communication.

1 2 3 4 5
least like me most like me

1-10 Stability and clarity of direction are an important part of my life.

1 2 3 4 5
least like me most like me

2-1 I have a clear picture of myself as a learner.

1 2 3 4 5
least like me most like me

3-7 I do not often question my beliefs.

1 2 3 4 5
least like me most like me

4-14 I am challenged by learning situations that are open-ended.

1 2 3 4 5
least like me most like me

2-7 My list of things that I would like to learn is long.

1 2 3 4 5
least like me most like me

4-3 I need to have all the information before I make a decision.

1 2 3 4 5
least like me most like me

5-6 I am ready to listen when approached by a speaker.

1 2 3 4 5
least like me most like me

1-2 I am pleased with my personal development.

1 2 3 4 5
least like me most like me

2-11 Through periodic reflection learning becomes very intense for me.

1 2 3 4 5
least like me most like me

1-5 I am always aware of the balance that exists in my life.

1 2 3 4 5
least like me most like me

2-2 I look to role models for my own learning.

1 2 3 4 5
least like me most like me

3-3 I am most comfortable knowing and staying with the rules.

1 2 3 4 5
least like me most like me

3-10 I am adventurous in tackling problems.

1 2 3 4 5
least like me most like me

4-6 I work at relating issues/problems/topics to real world situations.

1 2 3 4 5
least like me most like me

4-10 I prefer learning situations that reinforce my thinking.

1 2 3 4 5
least like me most like me

5-8 Listening is easy for me.

1 2 3 4 5
least like me most like me

3-6 Don't change things that don't need changing.

1 2 3 4 5
least like me most like me

1-6 I am sensitive as to my input into significant relationships.

1 2 3 4 5
least like me most like me

1-8 I have a clear view and a definite plan for my future.

1 2 3 4 5
least like me most like me

2-4 I like to have a full view of my challenges.

1 2 3 4 5
least like me most like me

2-8 An important aspect of my approach to learning is to take "time out" to ponder what I am trying to learn.

1 2 3 4 5
least like me most like me

3-8 I prefer to deal with problems one at a time.

1 2 3 4 5
least like me most like me

4-11 I intentionally place myself in learning situations that will stretch and challenge my thoughts and beliefs.

1 2 3 4 5
least like me most like me

5-2 I hear complete ideas and information before drawing a conclusion.

1 2 3 4 5
least like me most like me

2-6 I am fully aware of my many prejudices.

1 2 3 4 5
least like me most like me

3-4 I become defensive when new ideas are suggested.

1 2 3 4 5
least like me most like me

3-1 When working on a difficult problem I like to work alone.

1 2 3 4 5
least like me most like me

4-2 I carefully select out information and facts from communications that I have.

1 2 3 4 5
least like me most like me

4-13 I like to concentrate my learning efforts in areas that have a direct payback for me.

1 2 3 4 5
least like me most like me

5-4 I am sensitive to the speaker's feelings in a communication.

1 2 3 4 5
least like me most like me

1-11 I learn best from someone who establishes a clear learning goal for me and helps by pushing me through to that end.

1 2 3 4 5
least like me most like me

3-12 I feel challenged when I have a problem to work on.

1	2	3	4	5
least like me				most like me

4-4 I enjoy making connections between my discipline and others.

1	2	3	4	5
least like me				most like me

3-13 The first thing I try to do with a problem is to simplify it.

1	2	3	4	5
least like me				most like me

4-8 I am not interested in generating new information, just in passing on what is already known.

1	2	3	4	5
least like me				most like me

4-15 It is important to me when beginning a learning activity to have a clear view of the end.

1	2	3	4	5
least like me				most like me

6-1 There are things and events which cannot ultimately be explained logically.

1	2	3	4	5
least like me				most like me

6-2 I like to indulge in emotions and sensations with the feelings of just letting go.

1	2	3	4	5
least like me				most like me

6-3 I have had experiences which inspired me to write a poem or a story.

1	2	3	4	5
least like me				most like me

List 5 adjectives that describe you as a learner.

1.
2.
3.
4.
5.

CIRCLE ONE OF THE TWO CHOICES THAT BEST DESCRIBES YOU.

2-13 In sight of a dilemma I use:

implicit faith reason

3-15 I generally like to:

deviate from the norm keep things the same

2-15 I prefer to:

think things through react spontaneously

4-17 In most situations I have:

many options very limited options

5-12 When speaking with someone I prefer to:

have eye contact not have eye contact

1-12 The most important evaluation comes from:

inside myself external sources

3-15 When faced with situations where I have no interest I:

tune out create an interest

5-11 During a communication I listen for:

facts ideas

2-14 I would rather be known as an/a:

expert facilitator

4-16 I am interested in:

the process of learning the information

1-13 In most situations I:

trust my decisions get lots of input

COMPLETE THE FOLLOWING SENTENCES:

A good learner is_____.

A good educator is_____.

The thing I like about myself as a learner is_____

_____.

The thing I like about myself as an educator is_____

_____.

HOW OPEN TO LEARN ARE YOU?

1	2	3	4	5
not open				extremely open

OTHER COMMENTS:

_____

_____

_____

_____

APPENDIX D

COMPARISONS OF EXPERT RATINGS AND LITERATURE BASIS FOR INDIVIDUAL ITEMS

OLS Items by Item Number

Item #	Item	Literature Measure	Expert Measure	Item Strength
1-01	I continue to learn things about myself.	PG	PG	3
1-02	I am pleased with my personal development.	PG	PG	2.5
1-03	I look to role models for my own learning.	PG	split	1.7
1-04	I seek out experiences that allow me to learn about myself.	PG	PG	2.7
1-05	I am always aware of the balance that exists in my life.	PG	split	2.5
1-06	I am very aware of my contributions toward significant relationships.	PG	split	2.2
1-07	I am challenged by the unknown in my future.	PG	PG	2.25
1-08	I have a clear view and definite plan for my future.	PG	split	2.5
1-09	Transition and change are an important part of my life.	PG	split	2.25
1-10	Stability and clarity of direction are an important part of my life.	PG	PG	2.25
1-11	I learn best from someone who establishes clear learning goals for me and helps by pushing me through to that end.	PG	split	2.33
2-01	I have a clear picture of myself as a learner.	RT	PG	2.7
2-02	I do not often question my beliefs.	RT	split	2.0
2-03	I am always considering the relevance of my beliefs.	RT	RT	2.5
2-04	I like to have a full view of my challenges.	RT	PS	2.25
2-05	I closely monitor myself and assess changes that I need to make.	RT	PG	3
2-06	I am fully aware of my many prejudices.	RT	RT	2.66
2-07	My list of things that I would like to learn is long.	RT	PG	3
2-08	An important aspect of my approach to learning is to take "time out" to ponder what I am trying to learn.	RT	RT	2.5
2-09	It is important to me to see how the learning relates to my life.	KT	split	2.2
2-10	The real significance of learning becomes clear to me only when I have had a chance to quietly reflect.	RT	RT	2.5
2-11	Periodic reflections allow me to become more absorbed in my learning.	RT	RT	2.5
2-12	I learn best from someone who allows me opportunities to periodically stop and reflect on what it is that I am learning.	RT	RT	2.7
3-01	When working on a difficult problem I like to work alone.	PS	PG	2.0
3-02	I enjoy playing with new ideas----What if?	PS	PS	2.7
3-03	I am most comfortable knowing and staying with the rules.	PS	PS	2.25
3-04	I become defensive when new ideas are suggested.	PS	PS	2.66
3-05	When a new approach seems difficult I stick with the status quo.	PS	PS	3
3-06	Don't change things that don't need changing.	PS	PS	2.5
3-08	I prefer to deal with problems one at a time.	PS	PS	2.5
3-09	I am in constant search of personal experiences and adventures for myself.	PG	PG	2.5
3-10	I am adventurous in tackling problems.	PS	PS	2.72
3-11	A clear focus on the problem often seems impossible.	PS	PS	2.25
3-12	I feel challenged when I have a problem to work on.	PS	split	2.3

Item #	Item	Literature Measure	Expert Measure	Item Strength
3-14	I am surprised to find the answer to one problem in the context of a totally different problem.	PS	split	2.7
4-01	I enjoy exploring ideas and concepts.	KT	split	3
4-02	I carefully select out information and facts from communication I have.	KT	split	2.3
4-03	I need to have all the information before I make a decision.	KT	PS split	2.5
4-04	I enjoy making connections between my discipline and others.	KT	KT	2.66
4-05	I love to hear lots of opinions on a topic.	KT	L	2.25
4-06	I work at relating issues/problems/topics to real world situations.	KT	split KT & PS	2.7
4-07	I feel less confident in learning situations that are out of my discipline.	KT		1.7
4-09	The problem is that I have trouble narrowing my learning focus because I am interested in so many things.	KT	split	2.25
4-10	I prefer learning situations that reinforce my thinking.	KT	split	2.25
4-11	I intentionally place myself in learning situations that will stretch and challenge my thoughts and beliefs.	KT	PG	3
4-13	I like to concentrate my learning efforts in areas that have a direct payback for me.	KT		E
4-14	I am challenged by learning situations that are open-ended.	KT	PG	3
5-01	I give an individual my full attention when speaking to me.	L	L	2.7
5-02	I hear complete ideas and information before drawing a conclusion.	L	L	2.3
5-03	I work hard at understanding what is said to me.	L	split	2.5
5-04	I am sensitive to the speaker's feelings in a communication.	L	L	2.6
5-05	I encourage others to express their opinions.	L	split	2.5
5-06	I am ready to listen when approached by a speaker.	L	L	2.5
5-07	I have completed my interpretation before the speaker is finished.	L	split	1.7
5-08	Listening is easy for me.	L	L	2.5
5-09	I make communications more efficient by clarifying for the other person.	L	split	2.25
5-10	I deal with the topic at hand during a communication.	L	L	2.25

APPENDIX E

ITEMS TO KEEP AND ITEMS TO ELIMINATE

OLS Items Kept/Eliminated

Keep/ Elim	Literature Measure	Expert Measure	Item Strength	Item #	Item
E	KT		l.7	4-07	I feel less confident in learning situations that are not of my discipline.
E	KT		E	4-13	I like to concentrate my learning efforts in areas that have a direct payback for me.
E	KT	L	2.25	4-05	I love to hear lots of opinions on a topic.
E	KT	split	2.2	2-09	It is important to me to see how the learning relates to my life.
E	KT	split	2.25	4.09	The problem is that I have trouble narrowing my learning focus because I am interested in so many things.
E	KT	split	2.25	4-10	I prefer learning situations that reinforce my thinking.
E	KT	split	2.3	4-02	I carefully select out information and facts from communications I have.
E	L	split	l.7	5-07	I have completed my interpretation before the speaker is finished.
E	L	split	2.25	5-09	I make communications more efficient by clarifying for the other person.
E	L	split	2.5	5-05	I encourage others to express their opinions.
E	PS	split	l.7	1-03	I look to role models for my own learning.
E	PG	split	2.2	1-06	I am very aware of my contributions toward significant relationships.
E	PG	split	2.25	1-09	Transition and change are an important part of my life.
E	PG	split	2.33	1-11	I learn best from someone who establishes a clear learning goal for me and helps by pushing me through to that end.
E	PG	split	2.5	1-05	I am always aware of the balance that exists in my life.
E	PG	split	2.5	1-08	I have a clear view and definite plan for my future.
E	PS	PG	2.0	3-01	When working on a difficult problem I like to work alone.
E	PS	split	2.3	3-12	I feel challenged when I have a problem to work on.
E	PS	split	2.7	3-14	I am surprised to find the answer to one problem in the context of a totally different problem.
E	RT	split	2.0	2-02	I do not often question my beliefs.
K	KT	KT	2.66	4-04	I enjoy making connections between my discipline and others.
K	KT	PG	3	4-11	I intentionally place myself in learning situations that will stretch and challenge my thoughts and beliefs.
K	KT	PS split	2.5	4-03	I need to have all the information before I make a decision.
K	KT	split	3	4-01	I enjoy exploring ideas and concepts.
K	KT	split KT & PS	2.7	4-06	I work at relating issues/problems/topics to real world situations.
K	L	L	2.25	5-10	I deal with the topic at hand during a communication.
K	L	L	2.3	5-02	I hear complete ideas and information before drawing a conclusion.
K	L	L	2.5	5-06	I am ready to listen when approached by a speaker.
K	L	L	2.5	5-08	Listening is easy for me.
K	L	L	2.6	5-04	I am sensitive to the speaker's feelings in a communication.
K	L	L	2.7	5-01	I give an individual my full attention when speaking to me.

Keep/ Elim	Literature Measure	Expert Measure	Item Strength	Item #	Item
K	L	split	2.5	5-03	I work hard at understanding what is said to me.
K	PG	PG	2.25	1-07	I am challenged by the unknown in my future.
K	PG	PG	2.25	1-10	Stability and clarity of direction are an important part of my life.
K	PG	PG	2.5	1-02	I am pleased with my personal development.
K	PG	PG	2.5	3-09	I am in constant search of personal experiences and adventures for myself.
K	PG	PG	2.7	2-07	I seek out experiences that allow me to learn about myself.
K	PG	PG	3	1-01	I continue to learn things about myself.
K	PS	PS	2.25	3-03	I am most comfortable knowing and staying with the rules.
K	PS	PS	2.25	3-11	A clear focus on the problem often seems impossible.
K	PS	PS	2.5	3-06	Don't change things that don't need changing.
K	PS	PS	2.5	3-08	I prefer to deal with problems one at a time.
K	PS	PS	2.66	3-04	I become defensive when new ideas are suggested.
K	PS	PS	2.7	3-02	I enjoy playing with new ideas---what if?
I	PS	PS	2.7	3-10	I am adventurous in tackling problems.
K	PS	PS	3	3-05	When a new approach seems difficult I stick with the status quo.
K	RT	PG	2.7	2-01	I have a clear picture of myself as a learner.
K	RT	PG	3	2-07	My list of things that I would like to learn is long.
K	RT	PG	3	5-05	I closely monitor myself and assess changes that I need to make.
K	RT	PS	2.25	2-04	I like to have a full view of my challenges.
K	RT	RT	2.5	2-03	I am always considering the relevance of my beliefs.
K	RT	RT	2.5	2-08	An important aspect of my approach to learning is to take "time out" to ponder what I am trying to learn.
K	RT	RT	2.5	2-10	The real significance of learning becomes clear to me only when I have had a chance to quietly reflect.
K	RT	RT	2.5	2-11	Periodic reflections allow me to become more absorbed in my learning.
K	RT	RT	2.66	2-06	I am fully aware of my many prejudices.
K	RT	RT	2.7	2-12	I learn best from someone who allows me opportunities to periodically stop and reflect on what it is that I am learning.
K-PG	KT	PG	3	4-14	I am challenged by learning situations that are open ended.

APPENDIX F

SUPERVISOR RATING FORMS

Dear Supervisor,

Thank you so very much for agreeing to share your input toward the development of the Openness to Learning Scale. Your responses will be treated in a highly confidential manner. You will be asked to score each person in your region on a scale from one to five. From that list of scores, people will be chosen to participate in the study group of respondents. You will not be involved in the selection of participants. The researcher will be responsible for keeping the responses of all respondents in complete confidence. Your score will be compared with those that participants give themselves in an attempt to further validate the Openness to Learning instrument. The scores will also be compared to those that are collected through several other data-collection methods. To further insure the confidentiality of the participants, I ask that you return your response sheet to Joe Levine, 410 Ag Hall, who will select the participants by score only.

Read the following description of the concept of openness to learning and give scores according to how accurately it describes the respondent.

THE CONCEPT OF OPENNESS TO LEARNING

The concept of "openness to learning" is one which borrows research findings from education, psychology, and learning theory to describe:

The person who is open to his/her own learning and who does not lose sight of his/her own capacity to grow. The person who is "open to learn" approaches personal learning and the learning of others in a proactive, holistic manner. This approach expands the potential for self-awareness in areas beyond those that are apparent. The "open to learn" person is one who reserves the right to seek options, opportunities and environments that challenge the thought processes. The Openness to Learning Scale is being designed to begin to better understand and discuss the concept of an individual's "openness to learning" and the possible influence that this concept may have on the professional educator.

DEFINITION OF SCORES

NAME NUMBER 1 2 3 4 5

1 The person who is not open to outside learning possibilities and is very comfortable knowing that he/she has enough knowledge to deal with his/her day-to-day needs.

2 The person who is very narrow in his/her learning approach and as a result learns only within topics that are of major interest to him/her and resists learning in areas outside of his/her major interest.

3 The person who does not resist learning in any area, but does not actively seek out or create new opportunities for personal learning and personal growth.

4 The person who is excited about learning and actively seeks out learning and personal growth opportunities for himself/herself and others.

5 The person who approaches personal learning and the learning of others in a proactive, holistic manner, who is self-aware and is in constant search of options, opportunities, and environments that challenge.

SUPERVISOR'S ASSESSMENT SHEET

NAME	NUMBER	ASSESSMENT				
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5

APPENDIX G

FIELD-TEST VERSION OF THE OPENNESS TO LEARNING SCALE

TO: Selected Study Participants

FROM: Nicky Hoffman (the student)

RE: A FEW MINUTES OF YOUR TIME TO HAVE AN OLD ENGLISH TEA BREAK AND THINK ABOUT YOURSELF

The focus of my research is the validation of the Openness to Learning Scale, which is enclosed. You are among the first small group to be randomly selected to participate in this validation process. I would be extremely grateful if you would kick back from your hectic schedule, take an Old English Teatime, and think about yourself for a few minutes as you complete this first version of the scale.

Answer the questions as they are most like you. Feel free to jot down any comments or questions that you might have.

I would hope that the completed version of this scale might be something that is useful to you in your work. I will make certain that you receive your own score (although it may take a while) and final copies of the scale for your own use. The instrument has been numbered so that this information can be provided to you in the future.

No identities of individual respondents will be reported in any way. The data will be used only by the researcher. Simply place the completed scale in the envelope provided and drop it in the mail.

Thank you so much for the donation of your break time to this project.

HAVE A JOLLY GOOD DAY!

OPENNESS TO LEARNING SCALE

Read each statement. Circle the number which best describes you in relationship to the statement.

1. I work hard at understanding what is said to me.

1	2	3	4	5
least like me				most like me

2. I continue to learn things about myself.

1	2	3	4	5
least like me				most like me

3. I am very aware of my contribution toward significant relationships.

1	2	3	4	5
least like me				most like me

4. It is important to me to see how the learning relates to my life.

1	2	3	4	5
least like me				most like me

5. I am ready to listen when approached by a speaker.

1	2	3	4	5
least like me				most like me

6. I give an individual my full attention when speaking to me.

1	2	3	4	5
least like me				most like me

7. I feel challenged when I have a problem to work on.

1	2	3	4	5
least like me				most like me

8. I hear complete ideas and information before drawing a conclusion.

1	2	3	4	5
least like me				most like me

9. I am challenged by the unknown in my future.

1	2	3	4	5
least like me				most like me

10. I like to have a full view of my challenges.

1	2	3	4	5
least like me				most like me

11. I enjoy making connections between my discipline and others.

1	2	3	4	5
least like me				most like me

12. I become defensive when new ideas are suggested.

1	2	3	4	5
least like me				most like me

13. I look to role models for my own learning.

1	2	3	4	5
least like me				most like me

14. I do not often question my beliefs.

1	2	3	4	5
least like me				most like me

15. I love to hear lots of opinions on a topic.

1	2	3	4	5
least like me				most like me

16. An important aspect of my approach to learning is to take "time out" to ponder what I am trying to learn.

1	2	3	4	5
least like me				most like me

17. I am adventurous in tackling problems.

1	2	3	4	5
least like me				most like me

18. I am fully aware of my many prejudices.

1	2	3	4	5
least like me				most like me

19. I have completed my interpretation before the speaker is finished.

1	2	3	4	5
least like me				most like me

20. I prefer to deal with problems one at a time.

1	2	3	4	5
least like me				most like me

21. I make communications more efficient by clarifying for the other person.

1	2	3	4	5
least like me				most like me

22. Don't change things that don't need changing.

1	2	3	4	5
least like me				most like me

23. I seek out experiences that allow me to learn about myself.

1	2	3	4	5
least like me				most like me

24. Stability and clarity of direction are an important part of my life.

1	2	3	4	5
least like me				most like me

25. The problem is that I have trouble narrowing my learning focus because I am interested in so many things.

1	2	3	4	5
least like me				most like me

26. The real significance of learning becomes clear to me only after I have had a chance to quietly reflect.

1	2	3	4	5
least like me				most like me

27. Listening is easy for me.

1	2	3	4	5
least like me				most like me

28. I learn best from someone who allows me opportunities to periodically stop and reflect on what it is that I am learning.

1 2 3 4 5
least like me most like me

29. When working on a difficult problem I like to work alone.

1 2 3 4 5
least like me most like me

30. I deal with the topic at hand during a communication.

1 2 3 4 5
least like me most like me

31. When a new approach seems difficult I stick with the status quo.

1 2 3 4 5
least like me most like me

32. My list of things that I would like to learn is long.

1 2 3 4 5
least like me most like me

33. I have a clear picture of myself as a learner.

1 2 3 4 5
least like me most like me

34. I enjoy playing with new ideas---What if?

1 2 3 4 5
least like me most like me

35. I carefully select out information and facts from communications I have.

1 2 3 4 5
least like me most like me

36. I am most comfortable knowing and staying with the rules.

1 2 3 4 5
least like me most like me

37. I am always considering the relevance of my beliefs.

1 2 3 4 5
least like me most like me

38. I work at relating issues/problems/topics to real world situations.

1 2 3 4 5
least like me most like me

39. Periodic reflection allows me to become more absorbed in my learning.

1 2 3 4 5
least like me most like me

40. I prefer learning situations that reinforce my thinking.

1 2 3 4 5
least like me most like me

41. Transitions and change are an important part of my life.

1 2 3 4 5
least like me most like me

42. I enjoy exploring ideas and concepts.

1 2 3 4 5
least like me most like me

43. I closely monitor myself and assess changes that I need to make.

1 2 3 4 5
least like me most like me

44. I need to have all the information before I make a decision.

1 2 3 4 5
least like me most like me

45. I have a clear view and definite plan for my future.

1 2 3 4 5
least like me most like me

46. I am sensitive to the speaker's feelings in a communication.

1 2 3 4 5
least like me most like me

47. I am surprised to find the answer to one problem in the context of a totally different problem.

1 2 3 4 5
least like me most like me

48. A clear focus on the problem often seems impossible.

1 2 3 4 5
least like me most like me

49. I am pleased with my personal development.

1 2 3 4 5
least like me most like me

50. I am challenged by learning situations that are open-ended.

1 2 3 4 5
least like me most like me

51. I am always aware of the balance that exists in my life.

1 2 3 4 5
least like me most like me

52. I am in constant search of personal experiences and adventures for myself.

1 2 3 4 5
least like me most like me

53. I feel less confident in learning situations that are out of my discipline.

1 2 3 4 5
least like me most like me

54. I encourage others to express their opinions.

1 2 3 4 5
least like me most like me

55. I like to concentrate my learning efforts in areas that have a direct payback for me.

1 2 3 4 5
least like me most like me

56. I intentionally place myself in learning situations that will stretch and challenge my thoughts and beliefs.

1 2 3 4 5
least like me most like me

57. I learn best from someone who establishes a clear learning goal for me and helps by pushing me through to that end.

1 2 3 4 5
least like me most like me

CIRCLE ONE OF THE TWO CHOICES THAT BEST DESCRIBES YOU.

58. In sight of a dilemma I use:

implicit faith reason

59. I generally like to:

deviate from the norm keep things the same

60. I prefer to:

think things through react spontaneously

61. I most situations I have:

many options very limited options

62. When speaking with someone I prefer to:

have eye contact not have eye contact

63. The most important evaluation comes from:

inside myself external courses

64. When faced with situations where I have no interest I:

tune out create an interest

65. During a communication I listen for:

facts ideas

66. I would rather be known as an/a:

expert facilitator

67. I am interested in:

the process of learning the information

68. In most situations I:

trust my decisions get lots of input

LIST 4 ADJECTIVES THAT DESCRIBE YOU AS A LEARNER:

1._____ 3._____

2._____ 4._____

PLEASE COMPLETE THE FOLLOWING SENTENCES:

A good learner is_____

_____

A good educator is_____

_____

The thing I like most about myself as a learner is_____

_____

The thing I like most about myself as an educator is_____

_____

A person who is "open to learn" can be described as_____

_____

HOW OPEN TO LEARN DO YOU FEEL YOU ARE?

1	2	3	4	5
not open				extremely open

CAN YOU GIVE SOME EXAMPLES OF YOUR OPENNESS TO LEARN?

_____

_____

_____

_____

Thank you for your participation!

PLEASE ANSWER THE FOLLOWING QUESTIONS:

What is your HIGHEST LEVEL OF FORMAL EDUCATION completed (circle the number of your answer)?

1 LESS THAN HIGH SCHOOL
2 HIGH SCHOOL
3 ASSOCIATE DEGREE
4 BACHELOR'S DEGREE
5 MASTER'S DEGREE
6 Ph.D.
7 OTHER_____

What is the highest level of education obtained by your parents?

FATHER_____

MOTHER_____

What is your present age?_____

What is your job title?_____

_____MALE _____FEMALE

Years of employment with this organization?_____

Your MARITAL STATUS (circle the number of your answer)

1 SINGLE
2 MARRIED
3 DIVORCED
4 SEPARATED
5 WIDOWED

APPENDIX H

THE RECOMMENDED OPENNESS TO LEARNING SCALE

OPENNESS TO LEARNING SCALE
(Recommended Version)

INSTRUCTIONS

READ CAREFULLY: The statements are brief and concise but they require your full attention.

BE HONEST WITH YOURSELF: Read the statements and mark the box which describes you a high percentage of the time. There are no right or wrong answers!

For the first 28 items:

CIRCLE: THE NUMBER WHICH DESCRIBES WHICH IS MOST LIKE YOU:

1	2	3	4	5
least like me				most like me

For the last 2 items:

CIRCLE: THE RESPONSE THAT IS MOST LIKE YOU.

Circle only one number OR response per statement.

Do not skip statements.

Move quickly; your first response is usually your best.

---

1. I am always considering the relevance of my beliefs.

1	2	3	4	5
least like me				most like me

2. I have completed my interpretation before the speaker is finished.

1	2	3	4	5
least like me				most like me

3. I enjoy exploring new concepts.

1	2	3	4	5
least like me				most like me

4. I feel less confident in learning situations that are out of my discipline.

1	2	3	4	5
least like me				most like me

5. I hear complete ideas and information before drawing a conclusion.

1	2	3	4	5
least like me				most like me

6. Periodic reflection allows me to become more absorbed in my learning.

1	2	3	4	5
least like me				most like me

7. I continue to learn things about myself.

1	2	3	4	5
least like me				most like me

8. I am always aware of the balance that exists in my life.

1	2	3	4	5
least like me				most like me

9. I need to have all the information before I make a decision.

1	2	3	4	5
least like me				most like me

10. I closely monitor myself and assess changes that I need to make.

1	2	3	4	5
least like me				most like me

11. I learn best from someone who allows me opportunities to periodically stop and reflect on what it is that I am learning.

1	2	3	4	5
least like me				most like me

12. The real significance of learning becomes clear to me only when I have had a chance to quietly reflect.

1	2	3	4	5
least like me				most like me

13. I believe that you shouldn't change things that don't need changing.

1	2	3	4	5
least like me				most like me

14. When a new approach seems difficult I stick to the status quo.

1	2	3	4	5
least like me				most like me

15. It is important to see how the learning relates to my life.

1	2	3	4	5
least like me				most like me

16. A clear focus on the problem often seems impossible.

1	2	3	4	5
least like me				most like me

17. Transitions and change are an important part of my life.

1	2	3	4	5
least like me				most like me

18. An important aspect of my approach to learning is to take "time out" to ponder what I am trying to learn.

1	2	3	4	5
least like me				most like me

19. I intentionally place myself in learning situations that will stretch and challenge my thoughts and beliefs.

1 2 3 4 5
least like me most like me

20. I am adventurous in tackling problems.

1 2 3 4 5
least like me most like me

21. I enjoy exploring new ideas.

1 2 3 4 5
least like me most like me

22. I am comfortable knowing and staying with the rules.

1 2 3 4 5
least like me most like me

23. I like to concentrate my learning efforts in areas that have a direct payback for me.

1 2 3 4 5
least like me most like me

24. I am challenged by learning situations that are open-ended.

1 2 3 4 5
least like me most like me

25. I seek out experiences that allow me to learn about myself.

1 2 3 4 5
least like me most like me

26. I am challenged by the unknown in my future.

1 2 3 4 5
least like me most like me

27. I am pleased with my personal development.

1 2 3 4 5
least like me most like me

28. I prefer learning situations that reinforce my thinking.

1	2	3	4	5
least like me				most like me

29. When speaking with someone I prefer to:

have eye contact not have eye contact

30. I generally like to:

deviate from the norm keep things the same

BIBLIOGRAPHY

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Acboff, R. (1979). The future of operational research is past. Journal of Operational Research Society, 30(2), 93-104.

Aiken, L. R. Content validity and reliability of single items or questions. Educational and Psychological Measurement, 40, 955-959.

Allen, M. J., & Yen, W. M. (1979). Introduction to measurement theory. Monterey, CA: Brooks/Cole.

Allport, G. W. (1937). Personality: A psychological interpretation. New York: Holt.

Anastasi, A. (1961). Psychological testing. New York: Macmillan.

Andrulis, R. S. (1977). Adult assessment. Springfield, IL: Charles C. Thomas.

Averill, T. H. (1964). Educational participation as openness to new ideas. Unpublished doctoral dissertation, University of Chicago.

Ball-Robeach/Rokead/Grube. (1984). The great American values test. New York: Free Press.

Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice-Hall.

Brookfield, S. (1981). The adult learning iceburg: A critical review of the work of Allen Tough. Adult Education, 110-118.

Brown, F. G. (1983). Principles of educational and psychological testing. New York: Holt, Rinehart & Winston.

Brownell, J. (1986). Building active listening skills. Englewood Cliffs, NJ: Prentice-Hall.

Buros, O. K. (1978). The mental measurement yearbook. New Brunswick: Rutgers University Press.

Conti, G. J. (1978). The collaborative mode in adult education: A literature review (Reprint of Chapter 2, doctoral dissertation, Northern Illinois University). (ERIC Document Reproduction Service No. ED 229 534)

Costa, R. R., & Costa, P. T., Jr. (1982). Self-concept and the stability of personality: Cross-sectional comparisons of self-reports and ratings. Journal of Personality and Social Psychology, 43(6), 1282-1292.

Cronbach, L. J. (1949). Essentials of psychological testing. New York: Harper & Brothers.

Cross, K. P. (1981). Adults as learners. San Francisco: Jossey-Bass.

Csikszentmihalyi, M. Learning, "flow," and happiness. In R. Gross (Ed.), Invitation to lifelong learning (pp. 166-187). Chicago: Follett.

Davies, H. M., & Aquina, J. T. (1975). Collaboration in continuing professional development. Journal of Teacher Education, 26, 274-277.

Dewey, J. (1983). How we think. Boston: D. C. Heath.

Fitzgerald, E. T. (1966). Measurement of openness to experience: A study of regression in the service of the ego. Journal of Personality and Social Psychology, 4(6), 655-663.

Frankel, A., & Brennan, J. (1983). Structuring an adult environment. Part IV: Establishing an environment for problem solving. (ERIC Document Reproduction Service No. ED 229 548)

Erikson, E. H. (n.d.). Identity and the life cycle (Monograph). Psychological Issues, 1, 1-171.

Gable, R. K. (1986). Instrument development in the affective domain. Boston: Kluwer, Nifhoff Publishing.

George, J. C., & Tittler, B. I. (1984). Openness to experience and mental health. Psychological Reports, 54, 651-654.

Glaser, R. (1984). Education and thinking: Role of knowledge. American Psychologist, 39(2), 93-104.

Glazer, N. (1974). The schools of the minor professions. Minerva, 12(3), 346-363.

Grick, M. L., & Holyoak, K. J. (1980). Analogical problem solving. Cognitive Psychology, 12(3), 306-355.

Hare, W. (1978). Open-mindedness and education. Quebec: McGill-Queens University Press.

Hare, W. (1983). Open-mindedness in elementary education. Elementary School Journal, 83(3), 212-218.

Hill, F. W. (1963). Learning: A survey of psychological interpretations. Chandler.

Holmes, J. H. (1967). Dogmatism as a predictor of communications behavior in the diffusion of consumer innovations. Unpublished doctoral dissertation, Michigan State University.

Houle, C. O. (1980). Continuing learning in the professions. San Francisco: Jossey-Bass.

Jackson, E. (1985). Peer rated therapeutic talent and affective sensitivity: A multiple regression approach. Psychology, A Quarterly Journal of Human Behavior, 22(314), 28-33.

Joe, V. C., Jones, R. N., & Ryder, S. (1977). Conservatism, openness to experience and sample bias. Journal of Personality and Assessment, 41, 5.

Jones, T. P. (1972). Creative learning in perspective. London: University of London Press.

Joseph, G. C., & Tittler, B. I. (1984). Openness-to-experience and mental health. Psychological Reports, 54, 651-654.

Kassirer, J., & Gorry, G. A. (1970). Clinical problem-solving: A behavioral analysis. Annals of Internal Medicine, 89, 245-255.

Kemp, C. G. (1957). Changes in patterns of personal values in relation to open-closed belief systems. Unpublished doctoral dissertation, Michigan State University.

Kidd, J. R. (1976). How adults learn. New York: Association Press.

Kiesler, C., Colling, B., & Miller, N. (1969). Attitude change, a critical analysis of theoretical approaches. New York: John Wiley & Sons.

Knowles, M. S. (1970). The modern practice of adult education. New York: Associated Press.

Kris, E. (1952). Psychoanalytic expressions in art. New York: International Universities Press.

Lindeman, E. C. (1961, originally published 1926). The meaning of adult education. Montreal: Hervesh House.

Lloyd, A. S. (1972). Freire, conscientization, and adult education. Adult Education, 23(1), 3-29.

Locke, J. (1692-1704). The conduct of understanding.

Loevinger, J. (1966). The meaning and measurement of ego development. American Psychologist, 21, 195-206.

Logan, F. A., & Ferraro, D. P. (1978). Systematic analysis of learning and motivation. New York: John Wiley & Sons.

Long, H. B. (1982). Theoretical foundations of adult education: Borrowings from other disciplines (Theory, Innovation, and Practice in Andragogy No. 3). Tallahassee: Florida State University, International Institute of Andragogy. (ERIC Document Reproduction Service No. ED 228 463)

Lyman, H. B. (1986). Test scores and what they mean. Englewood Cliffs, NJ: Prentice-Hall.

McCrae, R. B., & Costa, P. T., Jr. (1980). Openness to experience and ego level in Loevinger's Sentence Completion Test: Dispositional contributions to developmental modes of personality. Journal of Personality and Social Psychology, 30(6), 1179-1190.

McKinney, D., Jr. (1973). The authoritarian personality studies. The Hague: Mouton.

Minsky, M. A. (1975). Framework for representing knowledge. Psychology of computer vision. New York: McGraw-Hill.

Montgomery, R. L. (1981). Listening made easy. New York: Amacom.

Moray, N. (1969). Listening and attention. Harmondsworth, Eng.: Penguin Books.

Naisbitt, J., & Aburdene, P. (1985). Reinventing the corporation. New York: Megatrends.

Norman, D. A., Gentner, D. R., & Stevens, A. L. (1976). Comments on learning schemata and memory representation. In D. Klahr (Ed.), Cognition and instruction. Hillsdale, NJ: Erlbaum.

O'Neil, H. F., Jr., & Spielberger, C. D. (1979). Cognitive and affective learning strategies. New York: Academic Press.

Oppenheim. (1966). Questionnaire design and attitude measurement. New York: Basic Books.

Parsons, R. J., Tittler, B. I., & Cook, V. J. (1984). A multi-trait multi-method evaluation of creativity and openness. Psychological Reports, 54, 403-410.

Penland, P. R. (1981). Towards self-directed learning theory. Paper presented to the Adult Education Association. (ERIC Document Reproduction Service No. ED 209 475)

Phipps, W. J. (1977). The development of attitudes towards continuing professional learning in collegiate nursing students. Unpublished doctoral dissertation, University of Chicago.

Rein, M., & White, S. (1980). Knowledge for practice: The study of knowledge in context for the practice of social work (Working paper, Division for Study and Research in Education, Massachusetts Institute of Technology).

Rembold, K. L., & Yussen, S. R. (1986). Interactions of knowledge, learning, and development (Report from the Project on Metacognitive Aspects of Prose Comprehension, Wisconsin Center for Education Research, Madison). (ERIC Document Reproduction Service No. ED 275 768)

Robinson, R. D. (1979). Helping adults learn and change. Wisconsin: Omnibook.

Rogers, C. L. (1969). Freedom to learn. Columbus, OH: Charles E. Merrill.

Rokeach, M. (1960). Open and closed mind. New York: Basic Books.

Rosenberg, M. (1979). Conceiving the self. New York: Basic Books.

Rumelhart, D. E., & Norman, D. A. (1975). Explorations in cognition. San Francisco: Freeman.

Schachtel, E. G. (1954). The development of focal attention and the development of reality. Psychiatry, 17, 309.

Schon, D. A. (1987). Education: The reflective practitioner. San Francisco: Jossey-Bass.

Sheehey, G. (1981). Pathfinders. New York: William Morrow.

Sokal, M. M. (1987). Psychological testing and American society 1890-1930. New Brunswick & London: Rutgers University Press.

Taylor, I. A. (n.d.). Similarities in structure of extreme social attitudes. Psychological Monographs.

Tesch, S. A., & Cameron, K. A. (1987). Openness to experience and development of adult identity. Journal of Personality, 55, 4.

Tough, A. (1971). The adult's learning projects: A fresh approach to theory and practice in adult learning. Ontario: The Ontario Institute for Studies in Education.

van der Kamp, L. J., Langerak, W. F., Dato, N., & de Gruijter, M. (1980). Psychometrics for educational debates. Chichester: John Wiley & Sons.

Vidulich, R. (1958). An empirical analysis of the belief referents of persons with open and closed cognitive systems. Unpublished doctoral dissertation, Michigan State University.

Welsh, G. S. (1959). Welsh Figure Preference Test. Palo Alto, CA: Consulting Psychologists Press.

Wertheimer, M. (1959, originally published 1945). Productive thinking. New York: Harper & Row.

Whitbourne, S. K. (1986). Openness to experience, identity, flexibility, and life change in adults. Journal of Personality and Social Psychology, 50(1), 163-168.

Wilson, G. D., Ausman, J., & Mathews, T. R. (1973). Conservatism and art preferences. Journal of Personality and Social Psychology, 25, 256-288.