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Professional Inter-Rater & Client Self Report Reliability of the Environmental Section of the Functional Assessment of the Elderly

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PROFESSIONAL INTER-RATER & CLIENT SELF REPORT
RELIABILITY OF THE ENVIRONMENTAL SECTION OF THE
FUNCTIONAL ASSESSMENT OF THE ELDERLY

By

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Amy M. Haan
Julie L. Johnston

THESIS

Submitted to the Department of Physical Therapy
at Grand Valley State University
Allendale, Michigan
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE IN PHYSICAL THERAPY

1994
PROFESSIONAL INTER-RATER & CLIENT SELF REPORT RELIABILITY OF THE ENVIRONMENTAL SECTION OF THE FUNCTIONAL ASSESSMENT OF THE ELDERLY

ABSTRACT

Health care needs of the growing elderly population place a great demand on the health care system. Information regarding a client's function is essential in geriatric care. Therefore, continuing research to develop reliable functional evaluation tools is imperative. One functional evaluation tool available to health care professionals is Functional Assessment of the Elderly (FAE). The purpose of this study is to examine the professional inter-rater and client self report reliability of the environmental section of FAE.

A random sample of 18 subjects was obtained. Subjects were required to be age 60 and older, and clients of the West Michigan area Visiting Nurse Services. The environmental section was filled out by three investigators through direct observation of each subject's home. The subject also completed the form.

The results were tabulated and each question analyzed using percentages. It was found that 23 of the 31 questions showed 90-100% agreement among the professionals. It was also found that 23 questions showed 90-100% agreement between the professionals and the client. No conclusive statements can be made regarding professional inter-rater and self report reliability due to the small sample size.
DEDICATION

We would like to dedicate this work, as a symbol of our gratitude, to our parents for their unending love and support throughout our education.
ACKNOWLEDGEMENTS

We would like to extend our appreciation to the following individuals who contributed their time, knowledge, and advice in support of our research: Dr. Jane Toot, Dr. Susan Franklin, Dr. Soon Hong, Cheryl Nelson, and the professionals of the West Michigan area Visiting Nurse Services who assisted us with obtaining our sample.
1. **Dementia:** irreversible deterioration of intellectual faculties.

2. **Gerontology:** the study of the physiological and pathological phenomena associated with aging.

3. **Holistic:** with regards to rehabilitation, concerns all aspects of a person's health.

4. **Inter-rater Reliability:** concerns consistency between two or more raters who measure the same group of subjects.

5. **Tactile:** the sense of touch, sensation used for feeling.

6. **Vestibular System:** provides information regarding the position of the head in relation to gravity and the linear and rotatory movement of the head.
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CHAPTER ONE

INTRODUCTION

The elderly comprise the most rapidly growing segment of our population. The number of persons age 65 and older rose from 16 million in 1960 to 25.5 million in 1980. By the year 2000 it is expected that there will be 100,000 people age 100 and over (Lewis, 1990). With such rapidly changing demographics, the health care needs of elderly individuals are becoming a critical and emotional issue. Health care needs, including extended care and hospitalization, place a great demand on the health care system. Therefore, medical professionals, including rehabilitation specialists, are focusing their attention on how to provide the best services to enable elderly individuals to achieve and maintain maximum functional independence.

As early as 1959, a World Health Advisory Group stated, "health in the elderly is best measured in terms of function" (Calvani, 1991). Maintenance of a patient's functional well being is a fundamental goal of medical practice and regular comprehensive geriatric assessment is becoming a central focus of geriatric care (Calvani, 1991; Almy, 1988). Measures of competence in activities of daily living, environmental conditions, mental status and emotional and psychosocial function have become increasingly utilized (Almy, 1988). Information about function is essential for diagnosis, prognosis and clinical decision making involving
geriatric care (Katz & Stroud, 1989). Therefore, continuing research to develop structured and reliable evaluation tools is imperative.

One functional evaluation tool available to health care professionals is FAE (Functional Assessment of the Elderly). The focus of this study is to examine the professional inter-rater and client self report reliability of the environmental section of this tool. The environmental section of this tool can help physical therapists, as well as other health care professionals, assess a patient's home and community environment in a structured and organized manner. Environmental evaluation is instrumental in developing treatment plans and home adaptations that can improve a person's independent function and safety within his/her home.

To date, studies testing professional inter-rater reliability and client self report reliability have not been conducted on the environmental section of FAE. Establishing professional inter-rater reliability helps to ensure similar and accurate results among health care professionals who utilize the tool. Also, patients who are able to use the tool to self report findings about their environment save the time and expense of a health care professional performing the evaluation. Therefore, it is important to determine if patients are able to utilize the tool and report accurate information.

The purpose of this study is to examine professional inter-rater and client self-report reliability of the environmental section of FAE.
CHAPTER TWO

LITERATURE REVIEW

Demographics of the Aging Population

The elderly comprise the most rapidly growing segment of the population (Lewis, 1990). Since there is not a single age at which one becomes "old", it is helpful to divide the elderly population into two groups. According to Belsky (1990) these two groups include: the young-old (65-75) and the old-old (late 70s and beyond). In the late 1800s, three percent of the population was age 65 or older; by 1990, the percentage had climbed to eleven. In the year 2020, it is estimated that as much as 30% of the population could be over 65 years of age. Furthermore, those persons age 85 and over, the old-old, constitute the most rapidly growing segment of the population. Also, in 1980, approximately 15,000 persons in the United States had lived 100 or more years; this number jumped to 25,000 in 1986, and it is projected to expand to 100,000 by the year 2000 (Lewis, 1990).

The increase in the number of the elderly has impacted the rise in health care costs, and has created a greater demand on the health care system. Elderly persons frequently suffer from chronic disease and are often limited in their daily activities. This contributes to more frequent hospitalization and longer lengths of stay (Pegels, 1988). Per capita costs of hospital care services in the United States ranged from $308 for those
under age 65 to $1087 for those 65 and over. Institutionalization costs also are high, beginning at about $18,000 per year. Furthermore, this segment of the population requires a wide variety of health care settings including: hospitals, long term care settings, rehabilitation facilities, out-patient clinics, respite centers, home care, hospices, and day care centers, which also contribute to the demand on the health care system. Due to these changing demographics further research pertaining to geriatrics is needed (Pegels, 1988).

Research that develops new methods to promote health care will improve the quality of life for the young and the old, will enable the aging person to remain or return to being productive and active participants in society and possibly will reduce the projected costs of health care which are presently a burden to all generations. (Lewis, 1990, p. 368)

**Physiological Factors that Impact the Elderly**

The physical changes that can occur in the elderly individual are varied. Changes are seen in the musculoskeletal, sensory, and nervous systems. Musculoskeletal changes include: loss of flexibility and strength, poor posture, and changes in gait. These musculoskeletal changes can result from biological, pathological, or functional causes (Lewis, 1990).

One biological cause of loss of flexibility is a change in collagen fibers. Collagen fibers are the main supportive tissues found in skin, tendon and bone. These fibers are normally arranged in a uniform parallel formation, which contributes to normal flexibility. With age, these fibers become irregular and less uniform contributing to decreased flexibility. Normal collagen formation also may be affected by poor nutrition (such as a
vitamin C deficiency). Loss of flexibility can also be affected by certain pathological conditions such as arthritis, and functionally by hypokinesis (decreased activity) (Lewis, 1990).

Loss of strength is affected by the following biological causes: a decrease in muscular hypertrophy, which results from a decrease in the number and size of muscle fibers and a decrease in the number of muscle motor units, which affects the coordination and speed of muscle contraction. There is also some loss of efficiency and reduced ability of the cardiovascular system to deliver necessary materials to the working muscles (Lewis, 1990). Furthermore, there are numerous pathological conditions that can cause muscle weakness and contribute to the loss of strength. Functionally, older people tend to be less active, also contributing to the loss of strength.

Posture is affected by a decrease in strength, flexibility, and from a biological standpoint, a change in the intervertebral disc. Functionally, posture is affected by decreased activity, such as sitting for long periods of time. Any condition such as arthritis, a decrease in cardiopulmonary status or a neurological diagnosis also can affect posture (Lewis, 1990).

Biologically, a combination of strength, flexibility, and postural limitations is implicated in gait changes with age. These gait changes include shorter strides, decreased limb movements, and shuffling gait. Decreased activity level also can lead to such changes in gait (Lewis, 1990).

Sensory changes that occur with the normal aging process include: visual, hearing, taste, smell, and touch disturbances. There is a general decline in all the senses as a person ages, and because the sensory threshold levels increase, stronger stimuli are needed to activate the sensory systems.
Limitations in sensory input due to general decline in the senses can affect an individual's safety and functional ability (Lewis, 1990). As with the musculoskeletal changes, disease processes can negatively affect the sensory system of an elderly individual.

Neurological changes associated with aging include: decreased numbers of brain cells, diminished cerebral blood flow, and declines in nerve conduction velocity. These changes result in functional slowing of response to external stimuli (Payton, 1983). Perceptual changes in the neurological system also occur. These include: increase in postural sway, degenerative changes in the vestibular system, decrease in tactile sensation and the ability to react to body changes in space (Lewis, 1990). Each of the perceptual changes can lead to decreased balance and subsequent falls and injury (Payton, 1983).

Lewis (1990) maintains that loss of flexibility, strength and impairment of balance are significantly affected by activity level. She further suggests that repetitive use of the sensory, nervous and musculoskeletal systems "helps prevent age-related loss of movement, speed, strength and balance" (Lewis, 1990, p. 170). Therefore, an elderly individual's ability to function safely and independently depends, in part on frequent and continual use of the sensory and neuromuscular systems.

**Social Factors that Impact the Elderly**

According to Belsky (1990), ageism is defined as negatively stereotyping people over the age of 65. Botwinick (1981) maintains that people stereotype the aged, and say negative things of them. Our society does not value the roles the elderly play, which is seen in literature,
television, and jokes which downgrade the older individual. Americans also hold the belief that aging is associated with serious health problems, low income, isolation, emotional disturbances, and closeness to death. Belsky (1990), however, believes that there is encouraging evidence that these rigid stereotypes are breaking down. Although many still see the elderly people as frail, incompetent, quarrelsome, and set in their ways, others view them as resilient, tough, generous, loving, and wise.

Common social situations that may impact the older person in either a negative or positive way include: retirement, marriage in old age, divorce, remarriage, and widowhood (Tomb, 1984). Retirement, often a long awaited event, can be a harmful social stressor to many individuals. Although retirement is supposed to be a satisfying and enjoyable time as well as a reward for a lifetime of work, it is often considered the beginning of old age. Retirement can cause a threat of inactivity and uselessness, restlessness, irritability and depression. "The leading hurdle to a satisfactory adjustment to retirement is lack of money" (Tomb, 1984, p. 34). Developing positive attitudes toward retirement, successful experiences in dealing with change, planning, and flexibility will facilitate a successful, healthy, low-stressed retirement (Lewis, 1990).

The crucial relationship for most older people is marriage. Marriage is the point around which most human contact revolves and is the center for social support. "Certain problems common among the elderly can stress and even destroy a relationship" (Tomb, 1984, p. 35). The leading causes of marital distress are poor health and limited finances. These stresses may contribute to the rising divorce rate. Problems that may arise after a divorce are isolation, division of income, loss of emotional support of a
spouse, loss of closeness with family members, and decline in health status (Tomb, 1984). Remarriage in older aged people is mainly due to the desire for companionship. They also remarry for financial security, physical security, or for love. When the new marriage is a happy one, the older person may be more active and social, and have improved emotional and physical health.

**Psychological Factors that Impact the Elderly**

Along with biological changes and social changes there are also psychological problems that can impact an elderly individual's function. From the psychological perspective a healthy older person should be alert, active, and happy. Memory should be good, and interest and motivation should be high. "Changes in thinking, memory, and personality accompany aging, but none of them is usually severe enough to undermine a rewarding old age" (Tomb, 1984, p. 25).

Stereotypically, the elderly are seen as mentally dull, having memory loss, being ornery, opinionated, dependent, unimaginative, and depressed. Few elderly individuals fit this stereotype, however, some elderly individuals exhibit some of these psychological behaviors. Some of the reasons for these behaviors are: illness, social impairments, and inadequate living conditions (Tomb, 1984). Emotional problems and psychiatric illness that are most common among the elderly include: depression, dementia or senility, and severe reactions to losses (Tomb, 1984). Depression may be one of the causes for alcoholism and drug dependency among elderly individuals. Alcoholism and drug dependency also may be major contributors to the increased incidence of illness, falls, injuries, and
accidents among older people (Lewis, 1990). Stress, anxiety, loneliness, and personality problems also should be recognized as limitations to optimal function (Tomb, 1984).

In the rehabilitation process, a holistic approach in treating the elderly is essential. Awareness of the biological, the social, and the psychological impacts on an elderly individual's life is mandatory. This awareness is needed in order to optimize the elderly individual's independent and safe functioning, within his or her home and community environments.

**Definition and Purpose of Functional Assessment**

With regard to the elderly, health usually has one of two meanings: (1) the absence of death, disease, disability, or discomfort; and (2) the degree of functional capacity or disability (Lewis, 1990). Functional capacity is defined as the ability to carry out functions that are fundamental to independent living. Activities such as bathing, dressing, toileting, transferring, continence and feeding, as well as the ability to complete more complex activities such as preparing meals, using the telephone and managing money (Gallo, Reichel, & Anderson, 1988). "Function also depends on the person's physical health, mental health and cognitive ability, social and economic resources, environmental situation and the level of strain other sources place on caregivers" (Calvani, 1991, p. 330).

Functional assessment is a method of identifying functional difficulties for the patient and patient's family and quantifying their impact (Calvani, 1991). Functional assessment, however, is not limited to the assessment of the patient's ability to carry out specific activities and tasks. Gallo and colleagues (1988) note that:
Assessment may also include significant happenings in a person's life or family that have a bearing on the health status or situation (events of daily living); demands placed on the person from within or from the family and society (demands of daily living); the nature of the physical environment (environment of daily living); and the values and beliefs of the person that determines decisions and responses regarding health care (values and beliefs in daily living).

Functional assessment serves many purposes. Comprehensive assessment of functional status can be useful in diagnoses of illness and self care deficits. It can identify the need for particular health care or supportive services. It is also useful in determining the effectiveness of therapy. Finally, functional assessment can provide a common language and baseline objective information from which health care professionals and colleagues can communicate (Calvani, 1991).

**Self Reporting Functional Performance Information**

*Importance, Purpose, Results of Previous Studies*

There are several methods available for collecting functional performance information. These include: professional judgment through direct observation or chart audit, personal interviews, and patient self-administered questionnaires. Although each method has advantages and disadvantages, it is important that all of the information obtained is reliable, valid and practical so that appropriate planning can take place (Jette, 1987; Harris, Jette, Chomp, & Clearly, 1986).

The most direct method of assessing functional performance is through observational testing by a trained professional. Although time consuming and costly, direct observational testing yields highly reliable and valid information, especially when the tests are standardized and strict protocols
are followed. The likelihood of introducing error into the assessment increases with indirect methods of assessing function. Indirect methods, such as chart audits and professional judgment, introduce variability amongst professionals and less control over how the information is collected (Jette, 1987; Harris, et al., 1986).

Patient self report instruments offer more economical and efficient means of collecting information. Large numbers of patients can be assessed quickly and self-administered questionnaires reduce the amount of professional time spent with the client. Self reported functional performance, however, is still not considered a valid and reliable reflection of the patient's function among many in the health care field (Jette, 1987; Harris, et al., 1986).

In a recent study Harris, and colleagues compared the results from a self reported physical function instrument (a shortened form of an interviewer-administered Functional Status Index FSI 2) with objective findings of functional performance testing. The investigators studied a group of elderly patients three to six months after a hip fracture and found the ratio between self-report and observed performance was high. Results indicated that the FSI is a valid method of assessing function and patient self report of functional disability, and when administered under standardized protocols, can produce believable and accurate information (Harris, et al., 1986).
Examples of Multidimensional Assessment Tools

The multidimensional assessment tool is one method used by a health care professional to assess function. Use of multidimensional assessment tools facilitates information gathering about a client's function from a variety of domains. Many assessment tools exist that facilitate collecting information regarding a person's functional status from only one domain. For example, the Katz Index provides information regarding the ability to perform activities of daily living (Katz & Stroud, 1989), the mental status questionnaire (MSQ) provides information regarding mental functioning, and the Family APGAR provides social functioning. However, there is an interdependence between the various domains that determines a person's functional status. Multidimensional assessment provides the information necessary to create an overall picture of a client's functional ability.

Examples of multidimensional assessment tools are: the Sickness Impact Profile (SIP); the Older Americans Research and Service Center (OARS); the Comprehensive Assessment and Referral Evaluation (CARE) (Kane and Kane, 1983); and the Functional Assessment of the Elderly.

"The Sickness Impact Profile (SIP) measures sickness-related dysfunction" (Kane & Kane, 1983, p. 222). This tool looks at fourteen different categories that affect a person's function. The categories are:

- social interaction
- ambulation
- sleep and rest
- taking nutrition
- usual daily work
- household management
- mobility/confine
t-ment
- communication
- pastimes, recreation
- intellectual function
- family interaction
- emotions, sensations
- personal hygiene

The SIP can be administered in written form or orally. Two versions of the SIP exist, a short form (146 questions) and a long form (235 questions). This assessment tool was not developed to be used particularly on the elderly population, however it has been used on the this population. Many reliability tests have been conducted on this tool. "Initial test-retest data from early pilot studies on 31 non-elderly subjects suggests a reliability of .8 to .88, for the long form. A more elaborate test-retest reliability study with 119 patients showed even more encouraging results" (Kane & Kane, 1983, p. 223).

The OARS instrument was developed to be useful to the clinician, the researcher, and the program analyst. The questionnaire, comprised of 105 questions, provides information about functional ability in the following areas:
- social resources
- economic resources
- mental health
- physical health
- activities of daily living

The instrument takes approximately one hour to administer. From the responses in each domain, a rater makes a judgment of functional status, along a six point scale. The OARS questionnaire not only provides information about a client's functional ability, but also provides information about services needed and services received by the client (Kane & Kane, 1983).
The Comprehensive Assessment and Referral Evaluation (CARE), was designed for a study between the United States and the United Kingdom. This study measured the functioning of elderly community residents in two cultures. The tool includes self report items, specific test items, observation items and global judgment items.

This tool includes the following domains:

- psychiatric
- medical
- nutrition
- economic
- social problems

The primary intent of CARE was to obtain a set of cross national comparative longitudinal data regarding urban community residents in New York and London. However, the developers also wanted to provide a method to monitor changes in symptoms, complaints, and function over time. With CARE, a common data base can be established from which multidisciplinary teams can share their assessments and examine the effectiveness of therapy (Kane & Kane, 1983).

The Functional Assessment of the Elderly (FAE) is a multidimensional assessment tool developed by Susan Franklin R.N., Ph.D., for Gary Nederveld and Associates, rehabilitation professionals. The philosophy upon which FAE was developed is that "...each of us is responsible not only for our lives, but for the well being and dignity of all human beings. An understanding that our quality of life is largely determined by an ability to function as a complete member of the human family" (Franklin, 1990).

With use of FAE objective information can be gathered regarding a client's functional and emotional status. The information gathered can be
used to identify problems in the above stated areas. Through the use of FAE, interventions such as: improvement of diagnoses, improvement in quality of diagnoses, identification of non-medical problems important in planning or recommending treatment, medication reductions, and facilitation of placement decisions are possible. These interventions may decrease nursing home use, acute care services; increase the use of community or home services and may extend the ability to maintain independent living. Ultimately, this may decrease the cost of health care services (Franklin, 1990).

In working with the elderly, the ultimate goal is to maximize their functional abilities. The information necessary to achieve this goal is provided through FAE. The components of FAE are: the assessment, the care plan, interview training, and the team. FAE assessment includes the following modules:

- mental status
- social
- caregiver reaction assessment
- economic
- activities of daily living
- values/directives
- environmental
- health history and physical
- summary of results

The care plan, covering each of the assessment modules, suggests interventions, allows individualization and involves the client and the family with intervention decisions. Persons who administer FAE receive interview training through workshops, self learning activities, and consultation. The FAE team includes the following health care professionals:
-primary care physician
-registered nurse with advanced training
  in gerontology
-medical social worker
-occupational therapist
-physical therapist
-audiologist
-psychologist
-medical specialists as indicated

Unique to FAE is a section that assesses a person's home and community environment (Appendix A). Accurate assessment and subsequent modification of the home environment can greatly reduce the risk of injury, as well as improve an elderly person's ability to independently function in his/her home (FAE).

Accurate assessment of the home environment may identify areas that pose potential risk to the client. Josephson (1991) maintains that those elderly residing in the community are more likely to fall from environmental causes than those in the institutional setting. Thus, the home should be assessed for potential hazards such as throw rugs, stairs, slippery floors, poor light, and cluttered rooms. Josephson (1991) states that most falls result from a combination of environmental hazards and the changes that occur as the result of the aging process.

Not only does an accurate environmental assessment reduce the risk of accidents, it can improve an elder's ability to function independently. By identifying problem areas in the home and community environment, modifications can be made that may prevent or delay the elder from needing assistance or moving to a long term care facility. This not only reduces medical care costs, but also allows the elderly individual to have a
greater sense of control and independence. Since the goal is to maximize function, an accurate assessment of an elderly person's home and community environment can reveal important information to facilitate this outcome (Josephson, 1991).
CHAPTER THREE

METHODOLOGY

Study Design and Instrument

This is a study designed to test the professional inter-rater and client self reporter reliability of the environmental section of FAE (Appendix A). FAE (described in chapter two) is a multidimensional assessment tool developed by Susan Franklin, R.N., Ph.D. Prior to initiation of this study, the investigators received written permission from Susan Franklin to use the environmental section for research purposes (Appendix B). Written approval was also granted from the Grand Valley State University Human Subjects Review Committee (Appendix C). Verbal permission was granted from Cheryl Nelson, (Rehabilitation Services Supervisor) of the West Michigan Visiting Nurse Service, for the use of their clients as subjects in this study.

The environmental section of FAE is comprised of three sections with a total of 31 questions, 29 of those being yes/no questions. The questions are designed to gather information regarding a person's home and community environment. The questions pertain to home safety, accessibility, and community resources.
**Sampled Population**

Inclusion criteria for sample subjects consisted of two variables. First, the subjects had to be 60 years old and over. Secondly, subjects were required to be clients of the West Michigan area Visiting Nurse Services.

**Investigators**

The investigators were three Grand Valley State University physical therapy students. The investigators were in their final year of study in the masters degree program.

**Investigator Training**

Investigator training consisted of two practice visits to two elderly residents in one of the investigator's community, as well as consultation with Susan Franklin. Some weaknesses were found in the methods during the practice visits, and the methods were then altered to improve the consistency of the study. Alterations made included: enlargement of print on the demographic form to improve clarity and readability, and development of a standardized instruction form to read to the client to ensure the client received clear and consistent directions (Appendix F and G).

**Procedure**

The Rehabilitation Services Supervisor of the West Michigan Visiting Nurse Services distributed a set of cover letters and informed consent forms to the employees of this agency (Appendix D and E). These employees included nurses, physical therapists, occupational therapists and
speech therapists. The Rehabilitation Services Supervisor verbally instructed these professionals in the process they were to follow in obtaining willing participants. Each employee was instructed to read the cover letter and informed consent form to those clients age 60 and over. At that time, the professional was to obtain the signature, address, and phone number of those interested in participating. The cover letter was detached for the client to refer to, and the informed consent form was returned to the Rehabilitation Services Supervisor.

On one occasion, two of the investigators provided a brief inservice for a team of 15-20 nurses and 5 team leaders at the Visiting Nurse Services office in Grand Rapids, Michigan. The purpose of the inservice was to clarify the purpose of the study, reinforce the procedure the VNS professionals were to follow, and to answer any questions.

The investigators then contacted via telephone those clients who consented, and scheduled appointments to visit their home. Investigators then visited each subject's home at the scheduled time. Upon arrival at the home, each investigator drew a number to determine the order in which they would collect data. To begin, one investigator read a standardized instruction form (Appendix F) to the participant. It was determined that the same investigator be responsible for reading instructions at each home. The instruction form explained to the participant how to fill out the demographic information sheet (Appendix G) and the environmental assessment form. If the client of the Visiting Nurse Services was unable to fill out the information due to physical, emotional, or mental limitations, a designated care giver or family member completed it. That person filled out the demographic information as it pertained to the client. If a care
giver or family member was unavailable, the investigator who read the instructions to the client read the questions and filled in the answers as the client answered verbally. This was done after all three investigators completed their investigation. As the client filled out the environmental assessment, the three investigators proceeded in completing the form based on their observations of the person's home and community.
CHAPTER FOUR

DATA ANALYSIS AND RESULTS

Techniques

To begin the process of data analysis, tally sheets were devised and each question was examined for agreement between the professionals and the clients. Agreement on each question consisted of each "professional" answering the same, whether yes or no. Thus, three professionals answering "yes" or three professionals answering "no" for a particular question was considered agreement. The client was only considered to be in agreement with the professional if they answered the same when the three professionals agreed.

One investigator tabulated the results from 18 environmental forms, then another investigator tabulated the forms, double checking for accuracy. After all the sheets were tabulated each question was analyzed using percentages to determine the amount of agreement between the three professionals. This is represented by $P\%$ in Tables 1, 2, and 3; and also in Figures A, B, C, and D.

Each question was analyzed using percentages to represent the amount of agreement between the professionals and the clients. The clients were said to be in agreement only when the professionals were in agreement. This is represented by $R\%$ in Tables 1, 2, and 3. $R\%$ represents the ratio of agreement between the professionals and the client.
TABLE 1

GENERAL SETTING

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>P%</th>
<th>R%</th>
<th>C%</th>
<th>Z-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>72.2%</td>
<td>30.8%</td>
<td>22.2%</td>
<td>3.00463*</td>
</tr>
<tr>
<td>#2</td>
<td>94.4%</td>
<td>94.4%</td>
<td>88.9%</td>
<td>.60295</td>
</tr>
<tr>
<td>#3</td>
<td>94.4%</td>
<td>100%</td>
<td>94.4%</td>
<td>0</td>
</tr>
</tbody>
</table>

KEY=
Sampled Population= 18 homes
P%=Agreement among professionals
C%=Agreement between professionals and client
R%=Ratio of agreement between the professionals and the client
   (expressed as a percentage)
Significant difference between the professionals(P%) and the client(C%)
TABLE 2

OUTSIDE DWELLING

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>P%</th>
<th>R%</th>
<th>C%</th>
<th>Z-Score</th>
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KEY= SEE TABLE 1
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FIGURE A

COMPARISON BETWEEN AGREEMENT AMONG PROFESSIONALS AND AGREEMENT BETWEEN PROFESSIONALS AND CLIENT

P% = AGREEMENT AMONG PROFESSIONALS
C% = AGREEMENT BETWEEN PROFESSIONALS AND THE CLIENT

FIGURE B

COMPARISON BETWEEN AGREEMENT AMONG PROFESSIONALS AND AGREEMENT BETWEEN PROFESSIONALS AND CLIENT

P% = AGREEMENT AMONG PROFESSIONALS
C% = AGREEMENT BETWEEN PROFESSIONALS AND THE CLIENT
FIGURE C

COMPARISON BETWEEN AGREEMENT AMONG PROFESSIONALS AND AGREEMENT BETWEEN PROFESSIONALS AND CLIENT

FIGURE D

COMPARISON BETWEEN AGREEMENT AMONG PROFESSIONALS AND BETWEEN PROFESSIONALS AND CLIENT
Finally, a Z test was administered for each question, to help make the decision of rejection or acceptance of the null hypothesis. The null hypothesis is: the professionals and the client showed agreement in answering the questions. Alpha, or the level of significance, is the maximum probability of rejecting a true null hypothesis. Alpha was set at .05 to determine the probability of committing a Type I error (the error of rejecting a true null hypothesis). The Z test represents the significance between two proportions. The Z test in this study represents the statistical significance between the agreement among the professionals (P%) and the agreement between the professionals and the client (C%). Results of the Z test can be found in tables 1, 2, and 3.

From the demographic questions the data was tabulated into percentages of responses in each category. Refer to Table 4 for this information.

**Characteristics of the Subjects**

A sample of eighteen homes was analyzed by the professionals. The residents of the home met the following criteria: clients of the West Michigan Visiting Nurse Services, and age 60 years and older. Eighteen clients and/or a caregiver also answered the questionnaire.

Fifty percent of these clients were between the ages of 71 and 80. Women out-numbered men by a five to one ratio. There was also a five to one ratio of those retired to those otherwise unemployed. The average income of the clients in our study was under $14,999 (Table 4).
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<td>45,000-60,000</td>
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<tr>
<td>60,000 &amp; ABOVE</td>
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Hypothesis and Research Questions

The primary purpose of this study was to examine the professional inter-rater reliability of FAE. Due to the limited number of subjects the investigators are unable to make conclusive statements regarding reliability of this tool. However, they are able to show trends of professional inter-rater and client self report reliability.

Regarding professional inter-rater reliability, the investigators demonstrated 100% agreement on 14 of the 31 questions. Furthermore, the investigators demonstrated 85%-99% agreement on nine questions.

With regards to client self report reliability, the clients demonstrated 100% agreement with the investigators on nine of the 31 questions. To determine agreement, the client was compared to the professionals for only those homes in which the professionals agreed. In addition, the client agreed with the professionals 85%-99% of the time on 14 of the questions.

Based on the Z-score, the null hypothesis was rejected on six questions. Thus, the client and the professionals did not show agreement in answering these questions. Finally, on five of the 31 questions where the professionals demonstrated 100% agreement, the client also was in 100% agreement.

Other Findings of Interest

Upon further analysis of professional inter-rater reliability, the following questions showed the professionals to be in 100% agreement:

Outside Dwelling:

2). Are there close neighbors?

4). Is there a grocery within walking distance?
5). Is there a suitable restaurant within walking distance?
6). Is there a pharmacy within walking distance?
7). Is there someone available for lawn care/ snow removal?

Inside Dwelling:
2). Do the living quarters have electricity?
3). Is the electricity turned on?
9). Is there a working telephone in the residence?
12). Does the client have his/her own bed and bedroom?
16). Do the living quarters have bathing facilities?
18). Are there cooking facilities available?
19). Are the cooking facilities in working order?
20). Are there laundry facilities available?
21). Are the laundry facilities in working order?

The professionals demonstrated less than 70% agreement on the following questions:

Inside Dwelling:
4). Is there adequate lighting in all stairs and hallways?
8). Are rugs securely fastened?
14). (If applicable) Will it (bathroom) accommodate a wheelchair?

In examining the results of the Z tests, significant disagreement between the professionals and the client was found on the following questions:
General Setting:

1). Place a check in the appropriate space, ___urban
   ___suburban___rural ___house ___apartment
   ___other

Outside Dwelling:

3). Is public transportation within walking distance?
4). Is there a grocery within walking distance?
5). Is there a suitable restaurant within walking distance?
6). Is there a pharmacy within walking distance?

Inside Dwelling:

6). Are there sturdy banisters, if stairway is present?
CHAPTER FIVE

DISCUSSION AND IMPLICATIONS

Discussion of Findings

Through examination and discussion, the following ideas were generated as possible explanations for the investigators' findings regarding professional inter-rater reliability. As stated previously, questions four (Is there adequate lighting in all stairs and hallways?), eight (Are rugs securely fastened?), and 14 (Will it (bathroom) accommodate a wheelchair?) of the inside dwelling section showed less than 70% agreement among the investigators. The following is a discussion of potential reasons for low agreement on the above questions.

The investigators believe with question number four there was some degree of subjectivity in determining what "adequate lighting" was in each household. Although each investigator was looking for a functioning light in all hallways and stairways, differences in each investigator's definition of "adequate lighting" existed. The investigators suggest that the question be reworded to read, "Is there a functioning light in all stairways and hallways?"

The investigators believe with question number eight they may have been inconsistent in determining their answers. For example, one investigator may have overlooked a rug in the home or may have answered that rugs were securely fastened if only one or two rugs were found.
Therefore, the investigators suggest that this question be reworded to state "Are all rugs securely fastened?".

Finally, with question number 14, two of the investigators answered that the bathroom would accommodate a wheelchair if only simple modifications were needed (i.e. removal of a door or cupboards), while the third investigator answered based on the arrangement of the bathroom at that time. Furthermore, the investigators feel that subjectivity was introduced in visualizing the space needed for a wheelchair. They suggest that this question state, "(if applicable) Will the bathroom accommodate a wheelchair without any structural modifications?".

Through discussion, several ideas were generated as possible explanations for the findings regarding the agreement between the professionals and the clients. As previously mentioned, the following questions demonstrated significant disagreement between the professionals and the client, as shown by the results of the Z-scores:

General Setting:

1). Place a check in the appropriate box, ____Urban
   ____Suburban   _____Rural   _____House
   ____Apartment   _____Other.

Outside Dwelling:

3). Is public transportation within walking distance?
4). Is there a grocery within walking distance?
5). Is there a suitable restaurant within walking distance?
6). Is there a pharmacy with walking distance?

The following is an explanation of these questions which demonstrated significant disagreement.
Question number one consisted of two parts regarding the location and type of residency. The clients tended to answer only one part of the question, while the investigators answered both parts. To eliminate this problem, the investigators suggest this question be made into separate questions.

Questions three, four, five, and six involve determining whether certain community services were within walking distance. The investigators feel the terminology "within walking distance" is not quantifiable and therefore, introduces significant subjectivity. To make these questions quantifiable, one suggestion is that these questions be worded to determine the availability of these community services. For example, "Is someone available to pick up and deliver groceries, if needed? Is someone available to pick up and deliver pharmaceuticals, if needed?"

Applications to Practice

The investigators feel that the environmental section of FAE can be most effectively utilized through a combination of direct observation of the client's home by the professional and interviewing the client. Through interviewing the client, the professional can obtain more detailed information than by observation alone. For example, a client's residence may consist of two levels, however through interviewing the client it may be found that the elder only uses one level. It is also felt that this tool is best utilized by home health care professionals, due to the ease of performing direct observation of the client's environment. Finally, the investigators feel that this tool can be easily used by all members of the health care team.
Limitations

The three limitations of this study include: (1) small population (18 homes), (2) Limited number of raters (three raters), (3) Introduction of potential bias through investigation sequence. The investigators' sequence consisted of the client filling out the form while the first professional made her observations of the home. Occasionally the client would read or discuss his/her answers out loud, possibly introducing bias to the second and third investigators, who had yet to complete their observation. The population size was small due to limited distribution of consent forms by the professionals of the Visiting Nurse Services, secondary to their busy schedules. The population size was also limited due to time constraints and deadlines of the research project.

Suggestions for Further Research/Modifications

It is suggested that replications of this study be conducted to provide a sufficient population from which reliability of the environmental section of FAE can be established. In the future it may be helpful for the investigators to provide initial inservices to the professionals who will be distributing the consent forms. It is also suggested that the deadlines and purpose of the study are emphasized and clearly explained to all the professionals involved with the research project.
REFERENCE LIST


APPENDIX A

Functional Assessment of the Elderly

Assessment

Reported by Client ____________________________ Per Site Visit ____________________________

General Setting

Place a ✓ in the appropriate space

1. □ Urban □ Suburban □ Rural □ House □ Apartment □ Other
2. Is this considered a safe location? □ Yes □ No
3. Are you satisfied with your living arrangements? □ Yes □ No
   If not, why not? ____________________________________________________________

Outside of Dwelling

1. Is the house accessible without use of steps? Yes No
2. Are there close neighbors? Yes No
3. Is public transportation within walking distance? Yes No
4. Is there a grocery within walking distance? Yes No
5. Is there a suitable restaurant within walking distance? Yes No
6. Is there a pharmacy within walking distance? Yes No
7. Is there someone available for lawn care/snow removal? Yes No

Inside Dwelling

1. Is the residence on one level? Yes No
2. Do the living quarters have electricity? Yes No
3. Is the electricity turned on? Yes No
4. Is there adequate lighting in all stairs and hallways? Yes No
5. Are hallways narrow? Yes No
6. Are there sturdy bannisters if stairway is present? Yes No
7. Is stairway steep and narrow if stairway is present? Yes No
8. Are rugs securely fastened? Yes No
9. Is there a working telephone in the residence? Yes No
10. Is there an emergency response system? Yes No
11. Is there a smoke detector in the residence? Yes No
12. Does the client have his/her own bed & bedroom? Yes No
13. Is there a bathroom on the same floor as the bedroom? Yes No
14. (If applicable) Will it accommodate a wheelchair? Yes No
Functional Assessment of the Elderly™

Assessment

15. (If applicable) Does the toilet have grab bars/safety bars?
   Yes ☐ No ☐

16. Do the living quarters have bathing facilities?
   Yes ☐ No ☐

17. (If applicable) Are there grab bars/safety bars in the bathing?
   Yes ☐ No ☐

18. Are there cooking facilities available?
   Yes ☐ No ☐

19. Are the cooking facilities in working order?
   Yes ☐ No ☐

20. Are there laundry facilities available?
   Yes ☐ No ☐

21. Are the laundry facilities in operating order?
   Yes ☐ No ☐

Any “no” response may indicate need for additional questioning. Use professional judgement and indicate comments below.

General Impressions:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Three Key Problems Noted:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

What is Client's Chief Area of Concern?:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
APPENDIX B

I, ______________________, developer of the Functional Assessment of the Elderly (F.A.E.), give Julie Johnston, Amy Haan, and Stacie Bronkema permission to use the environmental section of this tool for their Masters research project. I understand that they will be conducting a study to determine the inter-rater reliability of this section. I also give them permission to duplicate the environmental section, as necessary for data collection purposes.

______________________________
Susan Franklin R.N., Ph.D.

Date

5-17-93
July 19, 1993

Stacie Bronkema, Amy Haan & Julie Johnston

Dear Stacie, Amy & Julie:

The Human Research Review Committee of Grand Valley State University is charged to examine proposals with respect to protection of human subjects. The Committee has considered your proposal, "Inter-Rater and Self-Reporter Reliability of the Environmental Section of the F.A.E. (Functional Assessment of the Elderly)", and is satisfied that you have complied with the intent of the regulations published in the Federal Register 46 (16): 8386-8392, January 26, 1981.

Sincerely,

[Name]

Paul Huizenga, Chair
Human Research Review Committee
To Whom It May Concern,

Our names are Stacie Bronkema, Amy Haan, and Julie Johnston. We are Physical Therapy students at Grand Valley State University. Your name was given to us by your home health agency. We are conducting a research study as part of our requirements for a Master's degree in Physical Therapy, and are asking for your help in completing this study.

Participation in this study will entail completion of a questionnaire by you or a family member, and one approximately thirty minute visit to your home. The three of us will each fill out a devised questionnaire which evaluates your home and community environment. In order to fill out the questionnaire we will need to walk through your home, and need to turn on lights and electrical appliances, briefly.

The goal of our study is determine if the devised questionnaire we are using is reliable. It is important to determine if this questionnaire is reliable so health professionals can properly identify problems in a person's environment and make appropriate recommendations.

We would greatly appreciate your help. If you are interested, please sign the attached consent form and return it to your Physical Therapist, or to your Nurse. We will then contact you to set up a time when we can evaluate your environment.

Below are our phone numbers, please feel free to contact us with any questions.

Stacie Bronkema
Amy Haan

Your assistance is greatly appreciated.

Sincerely,

[Signature]

Stacie Bronkema, Amy Haan, Julie Johnston
CONSENT TO PARTICIPATE IN A RESEARCH STUDY

I understand that this is a study to determine if a particular questionnaire is reliable in evaluating a person's community and living environment. It is important to determine if this questionnaire is reliable so health professionals can properly identify problems in a person's environment and make appropriate recommendations.

I also understand that:

1. Participation in this study will involve one 30 minute visit to my home by three Grand Valley Physical Therapy students. Each student will fill out a questionnaire pertaining to my home and community environment.
2. I have been selected for this study because I am seen by a home health agency, and could benefit from having my home and community environment evaluated.
3. It is not anticipated that this study will lead to any emotional or physical risk to myself or my home.
4. Results of the study will be made available to me upon request.

I acknowledge that:

"I have been given a opportunity to ask questions regarding this study and they have been answered to my satisfaction."
"In giving my consent, I understand that participation in this study is voluntary and that I may withdraw at any time, not affecting the care I receive."
"I authorize the investigators to release the information obtained in this study for scientific research. I understand that I will not be identified by name."
"I have been given the investigators phone numbers so that I may contact them if I have any questions."

"I acknowledge that I have read the above information, and that I agree to participate in this study."

<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>DATE</th>
<th>WITNESS</th>
<th>DATE</th>
</tr>
</thead>
</table>

ADDRESS AND PHONE NUMBER ________________________________

I am interested in a summary of the results of the study.
STANDARDIZED INSTRUCTIONS FOR CLIENT

This is the questionnaire you agreed to fill out.

If you do not feel like you are able to complete this you may have a family member of caregiver fill it out. If this person is not available it is not necessary to fill out the form.

Please begin by filling out the demographic form by circling the appropriate answer.

Then complete the Environmental assessment by placing a check in the appropriate box.

If you do not know the answer or understand a question, please leave the answer blank.

CAREGIVER- Please begin by filling out the demographic information by circling the appropriate answer as it pertains to the client. Then complete the Environmental Assessment by placing a check in the appropriate box.
APPENDIX G

PLEASE CIRCLE THE APPROPRIATE ANSWER TO THE FOLLOWING QUESTIONS

1. AGE: 60-70 YEARS OLD
   71-80 YEARS OLD
   81 AND OLDER

2. GENDER: FEMALE MALE

3. RACE: WHITE BLACK OTHER

4. EMPLOYMENT STATUS: EMPLOYED RETIRED OTHER

5. EDUCATION: THROUGH 8th GRADE HIGH SCHOOL COLLEGE

6. HOUSEHOLD INCOME: UNDER $8,000
   8,000-14,999
   15,000-24,999
   25,000-44,999
   45,000-60,000
   60,000 AND ABOVE