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BOSTON UNIVERSITY

SCHOOL OF EDUCATION

Dissertation

THE EFFECT OF CONTEXT ON LEARNING FUNCTIONAL LIVING SKILLS FOR A POPULATION OF PEOPLE WITH SCHIZOPHRENIA

by

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Submitted in partial fulfillment of the

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Dedication

To Chris,
Without your love and support I could never have
embarked on this journey nor could I have reached
the other shore. Thank you.

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THE EFFECT OF CONTEXT ON LEARNING FUNCTIONAL LIVING SKILLS FOR A POPULATION OF PEOPLE WITH SCHIZOPHRENIA

(Order No. [illegible])

LINDA WERKLEY DUNCOMBE

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Abstract

This quasi-experimental study was undertaken to determine the effect of context on learning a functional living skill for individuals with cognitive deficits associated with the negative symptoms of schizophrenia.

Forty-six people (ages 27-62) with non-paranoid schizophrenia or schizoaffective disorder were matched on cognitive level (Allen Cognitive Level Screen – 90, Allen, Kerberg, & Burns, 1992), cooking experience, and living situation (group home or apartment). They were then randomly assigned to one of two treatment conditions, clinic or home. All participants were evaluated and taught basic cooking skills in either the clinic or their homes. Finally, all participants were evaluated in their homes.

Both groups scored significantly higher after cooking lessons ($t=5.57$, $df = 21$, $p<.0001$ for those in the clinic; $t = 7.81$. $df = 21$, $p<.0002$ for those learning at home); there was no significant difference between the two groups in where the learning took place ($\beta = -1.8$, $df = 42$, $p<0.23$). Those who learned in the clinic scored lower than the home group when tested at home ($t = -2.07$, $df = 42$, $p<.0489$) although this result must

be accepted with caution because of a significant difference between the two groups on the first assessment of cooking skill. Additional questions yielded the following: there was a positive correlation between cognitive level and cooking skill ($df = 44$, $r = .55$, $p < .001$); there was a positive correlation between cognitive level and transfer of learning ($df = 21$, $F = 52.49$, $p < .0000$); no significant correlation was found between amount of practice and increase in cooking skill ($df = 27$, $r = .256$, $r^2 = .066$).

People with cognitive deficits associated with schizophrenia can learn a specific functional living skill in different contexts. Qualitative aspects of those contexts are discussed. Further research is recommended to describe/understand transfer of learning from one context to another. Cognitive level is highly correlated with both ability to learn and ability to transfer learning. Additional research is recommended to adequately describe the effect of practice on learning a functional living skill. Implications for treatment and suggestions for clinical research are presented.

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Chapter I

Introduction

This research project has been designed to discover whether the occupational therapy practice of teaching functional living skills to people with schizophrenia is more effective when the teaching environment is also the environment in which skills will be used.

An occupational therapist uses self-care, work, and play/leisure activities therapeutically to increase independent function, enhance development, and prevent disability. Treatment may include adaptation of a task or of the environment. The ultimate goal is to achieve maximum independence and to enhance the quality of life. (Moyers, 1999). Occupational therapists work with people of all ages and diagnoses. The focus of this study is on those with functional impairments related to schizophrenia.

Approximately two million Americans, or 1% of the population, will have schizophrenia as adults (American Psychiatric Association, 2000). Although some symptoms are controllable with medications, people who suffer from long-term schizophrenia may exhibit profound difficulties in the tasks of everyday life. The ultimate goal of occupational therapy is for these individuals to be able to function in their environments to the best of their abilities. To this end occupational therapists (henceforth referred to as OTs) teach skills like communication, money management, and meal preparation. Because most OTs work in the mental health field with acute hospital inpatients, or with patients in partial hospitalization programs, or day programs,

functional living skills are taught in the context of a clinic with the expectation that patients will use the skills in their home environments. This continues to be the practice even though there is evidence to suggest that some people with the diagnosis of schizophrenia have difficulty both in learning and in transferring learned skills to different environments (Corrigan, 1991; Doty, 1975; Hayes, Halford, & Varghese, 1992; Hewitt, Wishart, & Lambert, 1981; Matson & Stephens, 1978; Spencer, Gillespie & Ekisa, 1983).

Time and again, patients end a hospital stay with their primary symptoms under control only to return because of functional limitations. The story is told that,

> "one client did quite well in a hospital setting when medication was administered to reduce her hallucinations. However, she was discharged home with no plan for how to spend the day and quickly began to feel isolated and bored, stopped taking her medication, and began hallucinating again. During a second hospital stay, an occupational therapist helped her learn to identify interests, manage time, use public transportation to get to activities and make friends. She remained on her medication and symptom-free for at least 2 years following that admission." (Bonder, 1997, p.322).

The patient in this example was able to use at home what she learned in the clinic. Not all patients are able to learn the independent living skills needed to function in the community during an acute hospital stay, possibly due to the short length of acute hospitalizations. Some go on to day programs or partial hospitalization. Even then, participants in these programs may have difficulty carrying out the skills they have learned in the clinic environment when they return to the community. This is a concern of many, including a group of psychologists who have focused their research on social

skills training, specifically for individuals with persistent schizophrenia (Liberman, Wallace, Blackwell, Kopelowicz, Vaccaro, & Mintz, 1998). They asked, "Do the skills learned in clinic training sessions generalize to the outside world?" (Liberman, et al., 1998, p. 1087). This question is also important to occupational therapists whose goal is community independence, not ability to function in a clinic.

There is data confirming that some people with schizophrenia, specifically those who have severe and persistent schizophrenia with functional limitations, have cognitive deficits that make learning and remembering new information difficult (Cornblatt & Keilp, 1994; Goldman-Rakic & Selemon, 1997; Mahaurin, Velligan, & Miller, 1998). Cognitive deficits must be addressed in treatment whether they are due to side effects of medication, to long periods of institutionalization or to structural and functional changes in the brain, specifically the prefrontal cortex that is responsible principally for working memory. Contextual, or environmental, cues are valuable supports to memory and are used regularly in occupational therapy treatment (Corcoran, 1997) as well as in education, specifically as described in the theory of situated cognition.

The learning theory of situated cognition addresses the importance of the context in which learning takes place and provides some guidelines for teaching functional living skills in context (Greeno, Smith, & Moore, 1993). Context has been reported as enabling individuals to learn the language and social mores necessary to participate in their culture (Vygotsky, 1962), to provide necessary problem-solving experiences (Willis & Schaie, 1993), and to provide support for memory (Ceci & Hembrooke, 1993). Contextual cues support appropriate encoding and organization (Sternberg & Frensch, 1993) so that

information can be retrieved and used again in similar situations. The more similar the situation, the less transfer of learning is necessary (Gott, Hall, Polorny, Dibble, & Glaser, 1993; Toglia, 1998)

When a skill is learned in one setting and must be used in another, difficulty may be encountered depending on the ability of the learner and the degree of difference between the two settings. Teaching a skill in context is an adaptation that appears appropriate for those who might have difficulty transferring learning of a skill to the context of application.

Occupational therapists have documented differences in patients' performance on assessments and in treatment between the clinic and the home; assessments in the home were more accurate and treatment was more effective and efficient (Park, Fisher, &Velozo, 1994; Young & Forster, 1992; Gladman, Lincoln, & Barer, 1993). However, very little research has been done to document whether or not patients in the community actually use skills previously taught to them in a clinic (Corrigan, 1991), that is, whether or not they are transferring their learning from the clinic to the community. Evidence is needed to determine if the occupational therapy practice of teaching functional living skills to people with serious and persistent schizophrenia is more effective when the teaching environment is also the environment in which the skills will be used. Discovering how, or if, context affects the learning of functional living skills would benefit people who could then be taught in the appropriate context.

Research of this nature has been difficult to conduct because of the fragmentation of the mental health care delivery system. Occupational therapists do not routinely have

access to patients after they are discharged from a treatment program, even though leaders in the occupational therapy profession have recommended that OTs follow their patients into the community (Fidler, 1994; Gibson, 1990; Stoffel, 1996).

In a long-term study of outcomes in individuals with serious and persistent mental illness, best practice was identified as having several components that are similar to the guiding precepts of occupational therapy and, therefore, relevant to occupational therapy treatment for this population (Santos, Henggeler, Burns, Arana, & Meisler, 1995). One of these components is identifying contexts that can support an individual's functional abilities; another is engaging the patient in an action-oriented approach to treatment; and a third is providing treatment where the patient feels comfortable. All three of these components can be addressed when occupational therapy treatment takes place in the community of the consumer.

In summary, this study is an attempt to answer the question: What is an effective context for people who have cognitive deficits related to schizophrenia in which to learn functional living skills that will be later used at home. More specifically, the questions being addressed are: What is the effect of context on learning the functional living skill of cooking for people with serious and persistent schizophrenia? And, if the skill of cooking is learned in a different context from that in which it will be used, will it transfer to the appropriate environment? The questions are further defined and stated as hypotheses.

Hypotheses and Questions

Since some individuals with schizophrenia have difficulty learning (Cornblatt & Keilp, 1994; Goldman-Rakic, & Selemon, 1997; Mahaurin, Velligan, & Miller, 1998), and those individuals may need contextual cues (Sternberg & Frensch, 1993), and since occupational therapy research has shown more accuracy in assessment and treatment in the home than in the clinic (Park, Fisher, &Velozo, 1994;Young & Forster, 1992; Gladman, Lincoln, & Barer, 1993), the first hypothesis is presented.

Hypothesis 1: The functional living skill of cooking will be learned better when taught to individuals with schizophrenia in the individual's home than when taught in the clinic.

A second hypothesis is based on information that some individuals with schizophrenia not only have difficulty learning, but also have difficulty transferring what they have learned so that it is useful in another setting (Corrigan, 1991; Doty, 1975; Hayes, Halford, & Varghese, 1992; Hewitt, Wishart, & Lambert, 1981; Matson & Stephens, 1978; Spencer, Gillespie & Ekisa, 1983). Based on the theory of situated cognition (Greeno, Smith, & Moore, 1993), individuals who learn in the context in which the skill will be used will be better able to demonstrate that skill than someone who learns the skill in another context. In addition, no transfer of learning (Toglia, 1998) is required.

Hypothesis 2: The functional living skill of cooking will be performed better at home when people with schizophrenia are taught in the home (same context) than when they are taught in a clinic.

Cognitive dysfunction appears to be related to difficulty in learning and in transfer of learning (Cornblatt & Keilp, 1994; Goldman-Rakic, & Selemon, 1997; Mahaurin, Velligan, & Miller, 1998), however, every individual has different abilities. To begin to gather data about the relationship between cognitive ability and learning functional living skills, two questions are asked:

Question 1: Is there a correlation between cognitive level and cooking skill?

Question 2: Is there a correlation between cognitive level and ability to transfer learning?

Several studies with this population in which participants had an opportunity to practice skills for up to 6 months demonstrated greater learning than studies in which there was less time spent practicing (Bellack, Turner, Herson, & Luber, 1984; Liberman, et al., 1998). A third question is added to describe the relationship between practice and increase in skill in this study since some individuals may be cooking on a daily basis and others may not do any cooking.

Question 3: Is there a correlation between practice, as self-reported, and increase in cooking skill?

Hypotheses will be empirically tested using a quasi-experimental design. Two groups of people with schizophrenia, matched on cognitive level and living situation, will be taught cooking. One group will be taught in their homes; the other group will be taught in a clinic. Cooking skill will be assessed before and after treatment and the differences in scores between the two groups will be compared. To determine if the newly learned cooking skills transfer to the home environment, the cooking skills of all

participants will be assessed in their homes within a few days from the end of the treatment sessions. If Hypothesis #2 is supported, those participants who learned in the clinic will perform less well in their homes than those who learned in their homes. The research questions will be analyzed with correlation statistics. For the first two questions, cognitive level scores and change scores from the cooking assessments will be identified. For the third question, correlation statistics will be applied to the amount of practice and change scores of cooking assessments.

To provide a background for the study presented, the literature review in the next chapter will include information about schizophrenia and symptoms relevant to learning, learning theory related to the learning needs of this population, including transfer of learning, relevant research about occupational therapy assessment and treatment, and occupational therapy with individuals with schizophrenia.

Chapter II

Review of the Literature

Schizophrenia

Schizophrenia is a major mental disorder that is characterized by problems in thinking, perceiving, and feeling along with impaired occupational and/or social functioning. It affects men and women equally and the usual onset is during late adolescence and early adulthood (American Psychiatric Association, 2000). Schizophrenia encompasses a variety of courses and symptoms, varying from one person to another but generally appearing as acute episodes with a period of remission in between (Wiersma, Nienhuis, Slooff, & Giel, 1998). Longitudinal studies have documented that only 10% of those diagnosed with schizophrenia remain ill or nonfunctional throughout their lives (Harding, Strauss, & Zubin, 1992). Approximately 50-65% of people with schizophrenia significantly improve or completely recover after only one or numerous episodes. The rest (25-40%) do not return to their previous level of functioning even though some improvement may be seen (Gerbaldo, Cassidy, & Helisch, 1995). Those people who do not recover completely and require help with life skills are the population of interest in this study.

Schizophrenia includes two main categories of symptoms, positive and negative (Andreason, 1987; Zubin, 1985), both of which must be present in order to make an

accurate diagnosis. Positive symptoms are behaviors that appear to be exaggerations or distortions of normal behavior and include delusions, hallucinations, disorganized speech/thinking, and grossly disorganized behavior (Peralta & Cuesta, 1998). Positive symptoms tend to respond well to antipsychotic drugs (Zubin, 1985). The term "negative symptoms" refers to the absence of behaviors in which well people normally engage or the performance of these behaviors more slowly than might be seen in the well population. Examples of these are flat affect, poverty of speech, slowed thinking, and lack of initiation of goal-directed behavior (Crow, 1995; Blanchard, Mueser, & Bellack, 1998). In contrast to positive symptoms, there is little evidence that negative symptoms respond to medication. These symptoms are, in fact, frequently noted as uncharacteristic behaviors of an individual prior to an initial acute episode (Zubin, 1985). Most people have at least one exacerbation after a period of remission during which time, although positive symptoms have subsided, negative symptoms persist (Falloon, 1984; Gupta, Andreason, Arndt, Flaum, Hubbard, & Ziebell, 1997; Schultz, Miller, Oliver, Arndt, Flaum, & Andreason, 1997; Wiersma, et al., 1998).

A third category of symptoms, called disorganized symptoms, has also been suggested (Cuesta & Peralta, 1995). Disorganized symptoms include: thought disorder, confusion, disorientation, and memory problems. The symptoms in this suggested category are all listed as common in schizophrenia (American Psychiatric Association, 2000), and some professionals consider them part of the negative symptoms, while others think they are common to all psychotic disorders, not just schizophrenia (Toomey, Faraone, Simpson, & Tsuang, 1998). Both the negative and the disorganized symptoms

interfere with an individual's functioning during acute phases of the illness and during remission. These symptoms disappear, or were never present, in those individuals who completely recover. One of the inaccuracies associated with the diagnosis of schizophrenia is that it is not clear if the negative or disorganized symptoms are part of the schizophrenia, part of the premorbid personality of the individual, or a result of side effects of antipsychotic medications. This is also the case with observed cognitive difficulties (Zalewski, Johnson-Selfridge, Ohriner, Zarrella, & Seltzer, 1998) in people with schizophrenia. First person accounts indicate a belief by those experiencing the illness that many negative symptoms are side-effects of medication (Watkins, 1996) as well as being due to a feeling of hopelessness..

Cognitive dysfunctions seen in patients with schizophrenia are considered part of the negative or disorganized symptoms (Basso, Nasrallah, Olson, & Bornstein, 1998; Bellack & Mueser, 1993). They include difficulty with information processing (Cadenhead, Geyer, Butler, Perry, Sprock, & Braff, 1997; Wykes, Katz, Sturt & Hemsley, 1992), lack of abstract thinking (Keri, Szekeres, Kelemen, Antal, Szindi, Kovacs, Benedek, & Janka, 1998), lack of ability to plan and carry-out goal-directed behavior, inattention or inability to focus, cognitive inflexibility, memory problems, and difficulty with visual processing (Cornblatt & Keilp, 1994; Mahaurin, Velligan, & Miller, 1998). Results of recent brain research document that the prefrontal cortex is affected in those with schizophrenia. The prefrontal cortex is responsible for many cognitive functions, specifically working memory (Goldman-Rakic & Selemon, 1997) and its role in learning, focusing, problem-solving, and performing daily tasks (Bellack, Gold &

Buchanan, 1999; Medalia, Aluma, Tryon, & Merriam, 1998) as well as overall "executive functions" (Royall, Mahurin, True, et al., 1993, p. 1813). Abnormalities in the dorsolateral prefrontal cortex were found to result in decreased motivation, decreased socialization and decreased ability to engage in complex problem-solving (Gur & Pearlson, 1993). Andreason (1997a; 1997b) has suggested that cognitive deficits are central to the diagnosis of schizophrenia, not side effects or merely negative symptoms. In treatment settings, people with schizophrenia were noted to have decreased ability to store and retrieve information, difficulty attending to a task (Brenner, Hodel, Roder & Corrigan, 1992) and decreased ability in activities of daily living (Sevy & Davidson, 1995). In addition, cognitive impairment was found to be unique to those with schizophrenia in a population of people institutionalized with a variety of diagnoses resulting in long-term mental illness (Wykes, et al., 1992) and to correlate with lack of progress in rehabilitation programs (Hemsley, 1977; Wykes, Sturt, & Katz, 1990).

The fact that many people with schizophrenia have been apparently unable to learn functional living skills has resulted in dependency on the health care system and increased cost to society with additional distress to the individual and his or her caregivers. Sevy and Davidson (1995) discussed the cost of cognitive impairment in schizophrenia in light of the fact that cognitive impairment shows no remission with medication as do other symptoms. Direct costs result from hospitalizations and outpatient services; indirect costs related to cognitive impairment are attributed to lost productivity and time spent by family members caring for someone with schizophrenia who lacks self-care and homemaking skills. This information corroborates two earlier

studies. In a descriptive study of lifestyles of patients with schizophrenia, one classic study found daily living skills were lacking. Clients had not developed work skills or skills in life tasks (Spivak, Siegel, Klaver, Deuschle, & Garrett, 1982). Similar findings were reported by Tessler and Manderscheid (1982) who gathered data on 1471 people with schizophrenia to determine predictive factors of adjustment to community living, i.e., ability to live in a non-institutional environment. Factors identified were basic living skills, behaviors that offend others, and somatic problems. Community adjustment was measured by work status, social activity, need for hospitalization, and quality of functioning in the community. Using a multiple regression analysis, the best predictor of work status was basic living skills (β= -.16). Basic living skills, which included personal hygiene, transportation, and money management, were also the main predictor of social activity (β= -.22). One long-term study to determine predictors of rehabilitation success for people with schizophrenia identified cognitive impairment as the one symptom that limited future independence (Wykes, et al., 1990). This was verified in a study comparing the functional status of older adults with and without schizophrenia (Klapow, Evans, Patterson, et al., 1997). In addition to finding a significant difference between functional status of the two groups, cognitive test scores were shown to be the best predictor of functional ability. This finding was refuted somewhat by Green (1996) who reviewed the research literature on neurocognitive deficits and functional abilities of people with schizophrenia. In his meta-analysis, he found more cognitive measures that did not predict success in the community than those that did. Negative symptoms were mostly associated with low social functioning and not all cognitive skills correlated with

functional ability. More specifically, the skills of secondary verbal memory (as opposed to immediate recall; i.e., requiring a time delay) and vigilance (awareness of one's surroundings tested by repeated response to an environmental stimulus) were correlated (verbal memory: $p < .001$; vigilance: $p < .01$) with all functional outcomes. Positive symptoms were not correlated with functional abilities, as has been reported previously.

Based on Green's research, Brown (2001) recommended that occupational therapists should provide environmental adaptations, including memory cues, for those persons with cognitive deficits that might interfere with skill acquisition. Green, Kern, Braff, & Mintz (2000) updated Green's (1996) earlier findings and, through meta-analysis, indicated that the best predictors for functional outcomes, in descending order of importance, were verbal memory, executive functioning, and vigilance. Another meta-analysis on cognitive ability and functional status, although not in disagreement with Green et al., (2000), identified a trend toward cognition being considered a core dimension in functional status. As evidence of the connection between cognition and functional ability, Knight (2000) identified several assessments that provide information about cognitive ability through observation of instrumental activities of daily living. The difference between these two meta-analyses appears to be the focus in the Green et al. (2000) study on cognitive components as predictors of functional abilities and Knight's (2000) focus on assessments that provide both information about cognitive abilities and observation of functional skill.

The evidence shows that some people with schizophrenia experience cognitive dysfunction that interferes with performance of basic life tasks through difficulties with

memory, learning, inattention, and problem-solving. In order to teach functional living skills to individuals with these cognitive deficits, it is important to look at learning theories that specifically address these issues.

Learning and Transfer of Learning

During rehabilitation, skills are learned that will enable one to function to the best of one's ability in an environment of choice or of necessity, as the case may be. Since where one learns a skill is part of the focus of this paper, basic terms such as learning and transfer of learning must be defined. Learning is, "the act or process of acquiring knowledge or skill" (Stein, 1988, p. 763); this is also, then, the basis of the rehabilitation process since the focus of rehabilitation is the learning of new skills and or the relearning of previously acquired skills. Specific cognitive processes, e.g., information processing, ability to plan and carry out goal-directed tasks, memory, general executive functions, and structures, such as those found in the prefrontal cortex, are necessary in order for this learning to take place. However, Puckett, Reese, and Pollina (1993) present the view that research has not adequately demonstrated that the same cognitive structures and processes are used in both laboratory and natural settings. Teaching in a laboratory or classroom does not necessarily lead to an individual being able to use the learned knowledge in everyday tasks. Since performing everyday tasks is the goal in rehabilitation, one must examine how and where to teach activities of daily living so that they are useful to the learner.

Situated learning is learning that takes place in the context of a situation (Greeno, Smith & Moore, 1993). The concept of situated learning is based on the work of Vygotsky (1962) who observed children growing up in the former Soviet Union and identified the importance of the cultural context to learning. Brown, Collins, and Duguid, (1989) provide an analogy that facilitates understanding of the concept. They describe an individual learning about a tool, but being unable to use it because he/she has not seen the tool used nor has he/she had the opportunity to practice using the tool in context. Another good example is the way in which language is acquired. Children learn vocabulary through daily interaction with people in their environment. By the time one is 17 years old, one has learned approximately 5,000 words per year on average. These words are learned in context. However, when a child is taught vocabulary in school, it is difficult to teach more than 200 words a year. Because dictionary definitions are like tools that haven't been observed being used in context or practiced in that same context, they are frequently not added to a child's working vocabulary (Miller & Gildea, 1987). To continue with the "tool" analogy, the child can pass a vocabulary test but not be able to use the tools of language in "authentic practice", defined as "coherent, meaningful, and purposeful activities" (Brown, et al., 1989, p. 34). In many cases, as skills/tasks are learned in a particular context, they become embedded in that context and can only be reproduced with the support of the cues of that context.

Research in everyday cognition has identified that everyday tasks are complex and multidimensional; when one learns a skill in a natural setting, he/she learns practical problem-solving that is necessary as well (Willis & Schaie, 1993). This was observed in

a cooking class of people who were learning to cook low calorie meals. Knowledge about what to eat was gained during the actual preparation of the food and, in addition to learning cooking skills and nutrition, the dieters learned how to problem-solve in real-life situations (Lave, 1988). Although these classes were not taught in the individuals' homes, these individuals were believed to have normal cognitive processing and should have been able to transfer these skills to their own kitchens.

The unique cognitive approach of each individual was demonstrated in research with elderly people on completion of instrumental activities of daily living (IADLs) (Lawton & Brody, 1965). Such IADLs as shopping, housekeeping, and food preparation were studied because they were identified as essential to living independently (Fillenbaum, 1985). One aspect of the tasks studied was the requirement for reading and comprehension. These varied in each task and with the abilities of each participant. In addition, each individual engaged in problem-solving around these activities in a unique way. Domains of these unique ways of problem-solving have been categorized into three aspects of everyday cognition: personal attributes, aspects of the task, and the context in which the task takes place (Willis & Schaie, 1993).

. A meta-analysis of research on everyday cognition compared studies performed in a laboratory with those performed in natural settings (Poon, Welke, & Dudley, 1993). The differences found appeared to be a function of the interaction between an individual's behavioral and cognitive processes and the functional cues available in the natural context as opposed to those in a controlled laboratory situation. The authors presented a classification system for identifying types of cognitive research and

suggested that future researchers consider the goal of their research when determining whether to do testing in a laboratory or a real-world setting. If a goal of the research is dependent on strict control, such as studying a specific cognitive mechanism, a laboratory must be utilized; however, if the goal is to predict function of a complex task in the real world, the location of the study should be a natural setting.

In their research on tacit learning, i.e., "...practical know-how that is usually not directly taught", widely referred to as "common sense", Torff and Sternberg (1998, p. 116) state their belief that significant learning takes place in everyday settings. Sternberg, Wagner, Williams, & Horvath (1995) identified three characteristics of tacit knowledge important to this discussion. The first is procedural, or "knowing how" to do something rather than "knowing that"; the second characteristic defines tacit knowledge as practically useful. Third, tacit knowledge is acquired by means of environmental support. Teaching for success, therefore, might best be done in the natural environment. When tasks are specific to a context, those tasks should be studied, or taught, in context (Sinnott, 1993). Some memory researchers go so far as to say that "memory processes cannot be adequately understood or evaluated acontextually" (Ceci & Hembrooke, 1993, p.122).

What is learned through practice in a particular situation is specific to the people, objects, and activity present at the time of the learning; this is Sternberg's triarchic theory of intelligence in everyday cognition (Sternberg, 1985). In order for one to use situated learning outside of that context, transfer of learning must take place.

Whenever we use what we have learned in a slightly different way, we have engaged in transfer of learning. More simply, transfer of learning is using what you have learned and building on it. Ellis (1965, p.3)) reminds us that, as adults, everything we do is probably based on earlier learning in that, "...experience or performance on one task influences performance on some subsequent task." Sternberg and Frensch (1993) identified four mechanisms necessary for transfer of learning to occur. These are: encoding specificity, organization, discrimination and set. These are described with examples below.

Encoding specificity refers to the storing of learned knowledge in the cortex so that it can be retrieved in future relevant situations (Sternberg & Frensch, 1993). Bassok and Holyoak (1989) provided an example of encoding specificity in a study in which people were taught the same algebra principles in two ways. Group One was taught that algebra was being learned because it would be useful in many aspects of life. Group Two was taught the same algebra in the context of a particular physics problem. When the students from both groups were later asked to do a problem that required the algebra they had learned, the group that had learned it in the context of physics were unable to apply it to another arena. Group One had encoded the material for retrieval.

How information is organized in one's memory and how ingrained that organization is affects retrieval and use of learned information. Frensch and Sternberg (1989) demonstrated the difference between a surface-structured and a deep-structured ingrained level of organization. Organization on the surface can be modified and will enhance transfer of learning. Deep-structured organization can be so automatic that it

impedes learning of new information or sequences of information (MacLeod & Dunbar, 1988; Shiffrin & Schneider, 1977). This may be the basis for the adage, "You can't teach an old dog new tricks." A study by Duncan (1958) provides a good example of surface-structured organization. He gave two groups the same amount of training in depressing levers to produce a series of light patterns. One group was given the same patterns in the same order throughout training; the pattern was varied for the other group. The group with the single pattern series learned better in the laboratory, but the group that had the varied task sequence was better able to transfer the learning to a new setting. Implications for transfer of learning are that, if learning of skills includes variation of the skill or use of the skill under different circumstances, there is more applicability to use of the skill in a changing, natural environment.

Discrimination is the storage of learned material that has been catalogued so that it is found relevant in a new learning situation and so that it can be ignored when it is not relevant. This concept has many social/cultural ramifications as in the example of a woman of Western culture who, because of previously learned behavior, holds out her hand for a handshake to a man from an Arab culture who may find her gesture inappropriate.

Set refers to the mental set with which learning occurs and whether or not the individual is open to transferring his or her learning to another situation. "Information is determined by its intended use" (Rojewski & Schell, 1994, p. 235.) Bandura's (1997) theory of self-efficacy is relevant here. If one believes that one is capable of learning something, the individual creates a mind-set that contributes to the learning of that skill.

Mind-set doesn't stop there. Perceived self-efficacy can enable one to organize what one knows so that one can act on that knowledge. It is hard to "see" learning. One has to observe oneself using what has been learned. Children who perceived themselves as good in math performed better in problem-solving situations than students who perceived themselves as poor in math (Collins, 1982, in A. Bandura, 1997, p. 37). Perceived self-efficacy then, in enabling one to organize what one has learned in combination with one's emotional reaction to it, one's motor abilities, and the context in which the learning is to be used, may be a major operative in using what has been learned.

Ferguson (1956) defined transfer as intelligence in that the ability to transfer learning enables one to learn more and to make connections with what has been learned previously. Several concepts of transfer of learning have been described. When learning of one task contributes to learning of another task, it is considered "positive transfer"; learning of a previous task that inhibits learning of a new task is called "negative transfer"; "zero transfer" occurs when there is no effect (Ellis, 1965, p.3). Gott, Hall, Polorny, Dibble and Glaser (1993, p. 260) presented the thesis that "transfer and learning are viewed as functionally equivalent." They identified a continuum of learning according to the degree of transfer. The lowest level of transfer is self-transfer, in which trials are exact repetitions of the task to be learned. Near-transfer describes learning tasks that are highly similar. The highest level is far transfer in which the individual can use his or her learning in a situation very different from the original context.

These principles describe "normal" learning. They can be applied to people with cognitive deficits, however understanding of the challenges presented by those deficits is

important. In the previous section on schizophrenia, numerous concerns were raised about cognitive functions, like attention, information processing, and memory, in some individuals with long term mental illness. When it is determined that an individual has a cognitive dysfunction, it is necessary to alter the teaching/therapy in such a way that enables someone with a cognitive dysfunction to learn as best as possible.

Joan Toglia (1998), an occupational therapist who worked with individuals with brain injury, expanded on Gott, et al.'s (1993) categories of transfer to include: immediate transfer, near transfer, far transfer and very far transfer. Toglia suggested that therapists could use these categories as a way of organizing and sequencing treatment and to identify appropriate goals. The presence of cognitive deficits may limit the level of transfer an individual is capable of reaching. Rojewski & Schell (1994) have suggested that in order to transfer learning it must be perceived as meaningful. They recommend that for a special needs population one incorporate rehearsal of concrete experience into the learning sessions. Others recommend the strategy of "mindfulness". This technique in which learners are asked to keep specific activities or situations in mind while working with new information, was developed with students with learning disabilities who were found to be more passive learners than their peers. Mindfulness includes activities to keep the students focused during learning as well as asking guiding questions while completing tasks. (Troia, Graham, & Harris, 1999).

This study on mindfulness is an attempt to discover whether a relationship exists between cognitive abilities and transfer of learning for a population of people with schizophrenia who have difficulty learning. In order to plan an appropriate teaching

strategy to plan for transfer of learning, it is important to look at prior studies involving transfer of learning with people who have schizophrenia.

Transfer of Learning and Schizophrenia

There is evidence to support both the difficulty people with schizophrenia have in transferring skills to the natural environment and the neurological reasons for the difficulty. Most of the research on transfer of learning for people with schizophrenia is related to the teaching of social skills. In a meta-analysis of social skills training with an adult psychiatric population, Corrigan (1991) was able to identify a small amount of research on generalization of treatment outcomes to the natural setting. In several of these studies, an attempt has been made to teach social skills to individuals with schizophrenia who have had no success in transferring the skills learned to the environment in which the skills should be used (Doty, 1975: Matson & Stephens, 1978; Spencer, Gillespie & Ekisa, 1983). Hewitt, Wishart and Lambert (1981) designed a social skills training program for hospitalized psychiatric patients. To provide encoding, storing and retrieval of the information being learned, the following techniques were used: modeling, behavioral rehearsal with constructive feedback, videotaping with discussion and feedback sessions about the videotapes. They documented a significant increase ($p<.01$) in social skills of an experimental compared with a control group (total $n=22$), but not in carry-over to other social situations. They reported informal evidence which indicated some generalizations to other social situations, but added that one should not expect transfer of skills to the community unless patients have access to the community at

the time they are learning the skills in order for them to try what they are learning. These recommendations run contrary to the findings of Hayes, Halford & Varghese (1992) who did not find that social skills, learned in a group treatment room, transferred to other areas of an inpatient unit even when the patients had access to the environment in which the skills were expected to be used (i.e., the day room).

Two studies, (Bellack, Turner, Herson & Luber, 1984; Liberman et al., 1998) reported positive results with effects beyond the day treatment program. In the Bellack, et al. study (1984), patients reported being less anxious and more assertive in interactions in the community. The authors attributed their success to the highly structured, goal-directed program with multifaceted learning opportunities including role-playing and "homework", i.e., assignments outside of the group meeting times. This program lasted for 12 weeks in an in-patient setting. Similarly, Liberman and his colleagues (1998) provided 6 months of intensive, clinic-based treatment 3 hours a day, 4 days a week. At the end of the treatment session, each participant was followed into the community (all lived in community-based group homes) by a case worker who provided support and "encouraged continued use of the patient's intensive treatment in community life" (Liberman, et al., 1998, p. 1088). Even with this support and apparent transfer of skills to the community, the use of these skills declined during the 24 months during which the participants were followed. Because the focus of this study was comparison of social skills training to a non-skills-based occupational therapy program (sensory stimulation, e.g.), the significance of this study was not reported in terms of learning of skills and transfer per se.

Inferences can be drawn from the report that indicates learning took place and, with support, was used in the community, but more specifics of this study are needed to benefit from the findings. The length and intensity of the training as well as the individual support in moving to the community, however, should be noted. When conversational behaviors were taught in an office environment to patients with schizophrenia, the use of those behaviors increased in the office, but those same behaviors were not seen in either the ward day hall or in the courtyard where patients spent much of their time. These authors concluded that, "Programs that do not train directly in the client's living environment must [foster and encourage] carry-over of trained skills to natural settings in order to produce clinically significant gains." (Wong, Martinex-Diaz, Edelstein, Wiegand, Bowen & Liberman, 1993, p. 304). Thus, resultant near transfer of learning was not observed in most of these studies even when the principles of learning, including the repetitions of self-transfer, were applied.

Some individuals with schizophrenia have been described as having cognitive deficits similar to those with brain injury (Fidler, 1991; Polsky, 1981; Taylor & Abrams, 1984). Brain damage in adults is often associated with partial recovery, but this is not true in schizophrenia for which ". . . practice in cognitive tasks can improve performance on that specific task, but there is little evidence of the generalizability of such training." (Bellack, 1992, p. 47). Two studies, one with people with schizophrenia (Wong, et al., 1993) and one with adults with diffuse brain injury (Neistadt, 1994), found that transfer of learning did not take place unless the individual retained abstract reasoning or had been explicitly taught to transfer the skill across treatment settings. "The task for

schizophrenia researchers is . . . to develop real-world training programs." (Bellack, 1992, p. 48).

There is evidence that one must learn functional living skills and use them in the community appropriately if one is to function in society. (Sevy & Davidson, 1995; Spivak, Siegel, Klaver, Deuschle & Garrett, 1982; Tessler & Manderscheid, 1982). There is also evidence to indicate that teaching functional living skills to people with schizophrenia in a clinical or day hospital program and expecting those skills to transfer to the community has not met with tremendous success (Corrigan, 1991; Doty, 1975; Hayes, Halford & Varghese, 1992; Hewitt, Wishart & Lambert, 1981; Matson & Stephens, 1978; Spencer, Gillespie & Ekisa, 1983). Several researchers have referred to the importance of context, or learning in vivo (Bellack, 1992; Wong, et al., 1993) in bridging the gap between the learning of functional skills and the use of those skills. Learning in context has also been addressed in the occupational therapy literature.

Contextual effects on occupational therapy assessment

When occupational therapists evaluated functional abilities of patients in the clinic and in the home, several studies indicated that the home was the superior context in reference to accuracy. Law (1993) surveyed ten activities of daily living assessments currently in use in occupational therapy and determined that the results were more accurate when presented contextually and when the individual being assessed was observed as opposed to being asked to provide self-reported data. Park, Fisher and Velozo (1994) administered the Assessment of Motor and Process Skills (AMPS) to

patients in the clinic and the home. Although there was no significant difference in an individual's motor skills when assessed in the clinic and in the home, there was a difference in process skills for instrumental activities of daily living (IADL: instrumental activities of daily living are those more complex skills like homemaking and cooking, as opposed to the simple routine of brushing one's teeth). This suggests that the familiar home environment tends to support IADL performance. Although this study was not carried out with individuals with schizophrenia, Pan and Fisher (1994) documented the validity of the AMPS with people with psychiatric disability. One additional study comparing performance on the AMPS in the clinic and the home was carried out with individuals with dementia (Nygard, Bernspang, Fisher, & Winblad, 1994). The researchers believed that the familiar environment of their homes would enable the individuals with dementia to perform better. There was, however, no significant difference between their performance in the clinic and the home. The results did not support the authors' belief that familiarity with the environment would enable people with dementia to perform their IADLs. Although the researchers believed that some procedural memory would allow the participants to function in their own environments better than in the clinic, they discovered that the remaining procedural memory was not sufficient to counteract the deterioration in functional skills.

A study by Brown, Moore, Hemman and Yunek (1996) shed some light on an additional reason why the performance in the home might not be significantly better than in the clinic. They assessed performance by people with severe and persistent mental illness on two IADLs: making a purchase in a store and taking a bus. Participants were

assessed, using a standardized instrument (the Kohlman Evaluation of Living Skills), in both a simulated and a natural environment. Because of the changing and unreliable nature of the natural environment, clients tended to score better in the simulated (controlled) environment than in the natural environment, especially on the transit task. This study was based on a convenience sample of 20 participants, so caution is necessary in generalizing the findings, but the results provide some information that occupational therapists must have if we are to produce meaningful outcome data and, hence, evidence-based practice. However, this suggests that when occupational therapists assess a patient's performance in the clinic we may think that the patient will be more functional in the community than is actually the case. Moreover, the question does not appear to be clinic versus the natural environment, but rather, how stable, and therefore, reproducible, the natural environment is. Different grocery stores were used in this study and not all grocery stores are organized the same, nor do they have the same stock. Even the same grocery stores have changing displays, rearrange grocery items, and have a nonstandard work schedule for employees so that the same people might not be in the environment each time the person shops. Buses could be even more unreliable.

As a follow-up of the Brown et al., (1996) study, Graham & Wolfe (2000) assessed 12 individuals with severe and persistent mental illness in their home environments to determine skill in meal-planning (creating menus) and preparing grocery lists. They found that only 2 people created their grocery lists in the context of their kitchens, and only one used the context appropriately, checking to make sure that he knew what was in his cupboards. The others chose the living room (n=6) or dining room

(n=2) for this activity. Not being in the correct context for the task required more memory than was necessary, was not efficient, and did not result in accurate lists based on the selected menu plans. Except for one instance, the kitchens were neat and organized. Distractions, like television and radio, were present in the non-kitchen environments.

A small group of individuals with schizophrenia and schizoaffective disorder who were living in the community completed an interview to determine the grocery shopping habits of this sample of the population (Hamera & Kolenbrander, 2000). The cumulative data on grocery shopping contributed to an assessment of grocery shopping skills useful as a context-based measure (Hamera and Brown, 2000). The authors found the evidence overwhelming that, because of the impact of context, this particular independent living skill could not be adequately assessed except in a grocery store.

In the literature reviewed context appears to be important in assessing independent activities of daily living both in terms of comfort of the person whose skills are being assessed and in planning for future use of skills. When the skills will be used in specific locations, it appears that skills should be assessed in those specific locations.

Contextual effects on occupational therapy treatment

Several studies have reported success in providing treatment in a patient's home. In a single-case study of a man with rheumatoid arthritis, Head & Patterson (1997) provided evidence of the value of assessment in the home in providing essential information for treatment planning. Two studies with stroke patients compared the

results of treatment performed in the clinic with treatment performed in the home. Young & Forster (1992) compared the results of patients who received physical therapy treatment in the clinic with those who received it at home. Results were reported on 108 subjects. After six months, the patients who received home treatment scored significantly higher in functional ambulation ($p<.03$), activities of daily living ($p<.01$) and social activities ($p<.07$). In addition, the results reported above were achieved with less treatment than those in the clinic. At six months, only 21% of participants in the home setting were still receiving physical therapy while 52% in the day hospital were still in treatment. In an attempt to replicate this previous study, Gladman, Lincoln & Barer (1993), compared functional outcomes of activities of daily living with a similar population of adults recovering from a cerebral vascular accident. One difference in this study was that there was an occupational therapist on this team. Home care treatment of post-stroke patients from three hospital units was compared with treatment in a clinic. Even though the patients discharged from two of the units to home care or day care were significantly older than the third group (by 11 and 17 years), all patients progressed more quickly in home care than in outpatient care, with the youngest group performing the best. For these younger patients, the researchers concluded that being home and having the ability to participate in previous household and leisure tasks was a key component to improvement. The positive results obtained in outcome studies of home treatment for patients with physical disabilities, specifically stroke patients, are encouraging. In none of these studies, however, was treatment provided in the clinic with follow-up to see if the skill was being carried out in the home. It should be noted that the ages of the

"young" group referred to above ranged from 35-60. This is the target age of the current study.

In reference to patients with schizophrenia, Hayes and Halford (1992) surveyed the occupational therapy literature in search of evidence that would support the assumption that skills taught in the clinic would generalize to the community. They reviewed 77 studies of which only 13, or 17%, referred to generalization. Of these 13, the authors found that only 4 (5% of the total) reported results of their treatment in reference to whether or not the skills taught generalized to the environment in which they would be used. Although valuable information can be gleaned from each of the studies, none of the four studies identified by Hayes and Halford (1992) taught a skill in the clinic or tested to see if that skill had transferred to the environment in which it was to be used.

An occupational therapy training program for people with agoraphobia, conducted in Wales, was based on in vivo training that included progressively more movement away from their homes and into the community (Taylor, 1983). Since clients attended the program once a week, self-report practice sheets were given to individuals to keep track of their attempts to move out of their homes during the week between treatment sessions. At the end of the program (length in weeks was not specified), significant improvement was seen ($p<.05$), but no attempt was made to determine if the decrease in anxiety and improvement continued after the sessions ended. Researchers felt that self-report information was accurate from interviews with the 8 participants.

In another study directed toward living in the community, Kielhofner and Brinson (1989) randomly assigned 40 young adults with psychiatric disability to two groups in an

aftercare program. There were three phases of the program to teach community living skills, two of which included activities performed in the community. The initial phase included pre-testing and individual goal-setting relative to what the participants would like to be able to do in the community. There was no teaching of skills in the clinical setting. The skills were taught in the community (phase two) and carried out in the community (phase three). At the end of phase three, post-testing was completed. There was no difference found between the experimental (n=20) and control groups (n=14: 6 of the participants in this group dropped out of the program). Since only 5 of the subjects in each group had been diagnosed with schizophrenia, the results can not be directly applied to patients with schizophrenia. However, the researchers felt that there was support for this type of program, and that lack of statistical significance was due to the small sample size, large differences in functional abilities (some participants merely needed support to maintain high-level community functioning while others required a "very structured program with less cognitive demands") (Kielhofner & Brinson, 1989, p.20) and the effect of averaging variable values. Further research is warranted to document the effectiveness of aftercare programs. The value of this study is in providing direction for future studies in which researchers could include only those individuals with specific diagnoses and people with similar cognitive abilities. The same protocol could be followed in different, but similar, aftercare programs to address the mandate for larger sample sizes.

In an attempt to improve the shopping and cooking behaviors of patients with schizophrenia who were living in the community, McDougall (1992) taught nutrition to 11 adults with chronic schizophrenia. Using qualitative and descriptive data analysis, she

reported that nutritional knowledge improved, but that the knowledge did not generalize to the shopping and eating behaviors of the participants in the study. McDougall referred the reader to two dietitians, Shepherd and Stockley (1987, in McDougall, 1992) who made the point that knowledge does not necessarily result in change in behavior or attitude. The individuals in the study may have benefited from an opportunity to practice their skills in the community in a supervised program prior to being expected to perform independently.

Hayes, Halford and Varghese (1991) attempted the most rigorous study of this type. In an intrasubject replication design, they randomly assigned patients with schizophrenia to two groups. Both groups received both social skills training and activity therapy on an in-patient unit, but on a staggered schedule. The dependent measure was amount of social contact in the day room during a time when light snacks and coffee were served. Inter-rater reliability was established as researchers quantified the social interactions of the patients before treatment and after each type of treatment had been completed. Although there were gains in social skills in the context of the groups, with social skills training being more successful than activity therapy, there was almost no transfer of the social skills to the day room of the unit.

A program reported by Brown (1999) to teach grocery shopping skills to people with schizophrenia and schizoaffective disorder in the community was reported as unsuccessful because of the changing environment of grocery stores. (Brown, 1999) Brown, Rempfer, & Hamera (2000) have revised the program to build into it more structure and experiences in problem-solving to handle unexpected circumstances.

Summary

Some people diagnosed with schizophrenia are unable to return to their previous lifestyle without learning or relearning functional living skills (Gerbaldo, et al., 1995). In addition, many people with long-term schizophrenia have cognitive deficits that make learning and transfer of learning difficult (Cornblatt & Keilp, 1994; Goldman-Rakic & Selemon, 1997; Mahaurin, et al., 1998). The literature on schizophrenia symptoms and treatment repeatedly mentions the difficulty some people with cognitive dysfunction and schizophrenia have in performing and learning daily tasks (Medalia, et al., 1998; Spivak, et al., 1982) and the importance of independent living skills in their lives (Sevy & Davidson, 1995; Tessler & Manderscheid, 1982; Wykes, et al., 1990) Occupational therapists are challenged to find effective ways to meet the treatment needs of this population (Fidler, 1991).

In both occupational therapy assessment and treatment, the patient's natural environment (home or community, as is appropriate) has been identified as the better place to provide occupational therapy services when compared to clinical settings. In addition, evidence has been presented to indicate that, without an opportunity to practice a skill in the context in which it will be used, learning of functional skills has not taken place. Hayes, et al., (1991) and McDougall (1992) taught skills in a clinical setting and found that they did not transfer to another context. These studies focused on programs to teach functional living skills, but not on how to insure that the skills are used once they are learned. Several studies (Brown, 1999; Kielfhofner & Brinson, 1989; Taylor, 1983)

demonstrated the principles of situated cognition, i.e., learning in context, in that the participants were able to learn skills in the environment in which they might be used, but there is no significant evidence that those skills were used after the training program.

When one learns something, sensory images of the environment are stored along with the learning of the task and eventually serve as cues when the individual repeats the task in the same environment (Greeno, et al., 1993). If an individual cannot perform the activity outside that environment, he/she is considered context-bound. This is also known as an inability to transfer learning, or to use a learned skill, in another location (Toglia, 1998). Clearly, the principles of learning and mechanisms of transfer seen in a typical learning environment need to be adapted for a population with cognitive deficits.

This study is an attempt to answer the following question: What is an effective context for people who have cognitive deficits with schizophrenia to learn functional living skills that will be used at home?

Chapter III

Methodology

A quantitative study was carried out in search of evidence to support two hypotheses. Three related questions are also asked.

Hypothesis 1: The functional living skill of cooking will be learned better when taught to individuals with schizophrenia in the individual's home than when taught in the clinic.

Hypothesis 2: The functional living skill of cooking will be performed better at home when people with schizophrenia are taught in the home (same context) than when they are taught in a clinic.

Question 1: Is there a correlation between cognitive level and cooking skill?

Question 2: Is there a correlation between cognitive level and ability to transfer learning?

Question 3: Is there a correlation between practice, as self-reported, and increase in cooking skill?

A quasi-experimental design is used because a convenient sample of local adults with schizophrenia was asked to participate. The independent variable was context

(clinic and home); the dependent variable was cooking skill as measured by the Kitchen Task Assessment – Modified (KTA-M) (See Appendix).

Recruitment of Participants

All participants were recruited through meetings in their group homes or housing groups. Potential participants voluntarily signed a consent form (see Appendix), filled out a questionnaire (see Appendix) and were given the Allen Cognitive Level Scale (ACLS-90). All recruitment, initial interviewing, and cognitive level testing was performed by the main researcher. If the participant's diagnosis fit the study, he/she was matched with another participant on the following characteristics: ACLS-90 score (within 0.2 points), prior cooking experience (differentiated between cooking experience prior to or after receiving a diagnoses of schizophrenia), and living situation. The ACLS-90 was given to insure that the two groups, i.e., those being taught in their homes and those being taught in a clinic, shared comparable cognitive levels. Cooking experience and living situation might also affect one's performance in cooking. One participant from each matched pair was then randomly assigned to one of two treatment groups, home or clinic.

Participants

Since the focus of this study is on those with functional impairments of schizophrenia, only those with the negative or disorganized symptoms of schizophrenia were included. Furthermore, individuals with schizoaffective disorder were included

since they have been found to have cognitive deficits similar to those found in individuals with non-paranoid schizophrenia (Manschreck, Maher, Beaudette, & Redmond, 1997).

People with paranoid schizophrenia have more positive symptoms and appear to have a much larger capacity to use their immediate and delayed memory than those with any other category of schizophrenia (So, Toglia & Donohue, 1997) as well as increased ability with decisional processing (Lyons & Fulkerson, 1984). For this reason, the population being studied in this project did not include those with the diagnosis of paranoid schizophrenia.

The 46 participants in this study were people who carried the diagnosis of non-paranoid schizophrenia or schizoaffective disorder for at least five years prior to the beginning of the study. Scores for two participants were not included in all analyses due to missing data. Since the majority of statistical calculations were made without these two sets of data, the summary statistics are reported without those two participants as well. The age range of the remaining 44 participants was 27-62, with a mean age of 45.5 years (SD = 8.5); 18 (40.9%) were women and 26 (59.1%) were men. Nineteen (43.2%) had the diagnosis of schizophrenia and 25 (56.8%) had the diagnosis of schizoaffective disorder. All lived in group homes or supported apartments that had kitchens available to the participant. (Six participants lived in supported apartments; 38 individuals lived in one of 12 group homes.) Twenty-five (56.8%) had previous experience with cooking or were currently preparing some of their own meals; nineteen (43.2%) had done no cooking or had only participated minimally in the cooking process, e.g., helping set the table or cleaning up after the meal. See Table 1 for group statistics.

Table 1: Summary Statistics – Overall and By Group

	Mean	SD	Median	Range	P-value*
ACLS-90: Overall	4.5	0.6	4.4	3.3 – 5.4	
Clinic	4.4	0.6	4.5	3.3 – 5.4	.9149
Home	4.5	0.5	4.4	3.3 – 5.4	
Age: Overall	45.5	8.5	46.0	27 – 62	
Clinic	45.6	8.5	46.0	30 – 60	.9163
Home	45.3	8.6	45.5	27 – 62	
	N	%		Chi-Square	
Female: Overall	18	40.9			
Clinic	8	36.4		.376	.5400
Home	10	45.5			
Schizophrenia: Overall	19	43.2			
Clinic	8	36.4		.834	.3610
Home	11	50.0			
Cooking: Overall	25	56.8			
Clinic	12	54.5		.093	.7610
Home	13	59.1			
*For baseline comparisons between groups					

Cooking

Although much research has focused on social skills (Bellack, et al., 1994; Hewitt, et al., 1981, Liberman, et al., 1998), occupational therapists are not the only professionals who teach social skills and social skills are only one of the things occupational therapists teach. Since part of the rationale for this study is to document the effectiveness of occupational therapy, a more typical occupational therapy treatment activity was chosen. In a descriptive study of community mental health in Canada, Chiu (1996) reported categories of goals for treatment in the community. The ultimate outcomes of occupational therapy services were identified as self-care, productivity, and leisure. Examples of self-care goals are improving personal care and financial

management. Improving homemaking is an example of productivity. Leisure goals included socialization and recreation. Occupational therapy practice guidelines for adults with schizophrenia identify meal preparation as an appropriate goal for patients living in the community (Kannenberg, 1997). Several treatment outcome studies have used cooking as an activity. Denton (1983) videotaped people with severe and persistent mental illness in the kitchen of their group home as part of a study to increase interpersonal skills. Her plan was to use the videotapes to demonstrate what people were doing, role play what they should or could be doing, and videotape improved behavior. She found, instead, that the residents of the group home for whom all meals had always been prepared lacked even essential skills in cooking. "Most of the subjects had never cooked and many tasks, such as tearing off a piece of aluminum foil, were new experiences. Even though the cooking procedure was simplified and specified the exact color, size, and name of the utensil to be used, it did require minimal problem solving abilities that created some difficulties. For example, Instructions: pour ½ cup of cold water into the glass measuring cup. Subjects' response: 'Where's the cup?', 'Where's the water?', 'How do I turn on the faucet?' Understanding common cooking terms, opening containers and knowing when the food had cooked enough were frequent problems (Denton, 1983, p.30). Crist, Thomas, and Stone (1984) reported that, in a pilot study of 8 adults with schizophrenia, a skill-oriented approach was more motivating than a sensorimotor activity like movement exercises or rubbing different textures on their arms (for tactile input), i.e., activities for which the participants could not see the goal. Cooking is a skill that may be more motivating for individuals with schizophrenia to

learn than an activity with a less clear-cut goal or an activity that is teaching a component of the ultimate goal. In a study comparing the affective meaning of three activities for psychiatric patients—cooking, a craft project, and a sensory activity—cooking was rated significantly more positively than the other two ($t=3.06$, $p<.01$) (Kremer, Nelson & Duncombe, 1984). Cooking was seen as pleasurable and motivating. In a study to determine effectiveness of cognitive rehabilitation for improving attention, it was suggested that treatment that was structured, concrete, and visual was the most effective (Brown, Harwood, Hays, Heckman, & Short, 1993). Cooking meets these three criteria. Additionally, in the previously cited study with brain-injured adults that documented difficulties with transfer of learning, cooking was chosen as the activity for which a treatment protocol was designed to increase ability to transfer skill (Neistadt, 1994). Her rationale for selecting cooking was that there is always a difference in the clinical environment from the individual's home environment in which the skill of cooking will take place.

Meal preparation is an important instrumental activity of daily living for most adults (Fillenbaum, 1985). Cooking generally takes place in a particular context and each kitchen is slightly different. The more different a kitchen in a clinic is from the kitchen in a person's home, the more, or farther (Toglia, 1998) the transfer that must take place. For these reasons, cooking will be taught to people with serious and persistent schizophrenia in two contexts: a clinic and their homes. Then, all participants will demonstrate their newly learned cooking skill in their homes.

Theoretical Rationale for Treatment Sessions

The Person—Environment—Occupational Performance Model (Christiansen & Baum, 1997) provided the basic occupational therapy framework on which the treatment sessions for this project were based. The three elements named in the model are considered the basic elements of occupational therapy treatment: the person and what motivates him/her, what he/she does in his/her everyday life (the meaningful occupations of life), and the context in which those occupations are carried out. This last element also includes an analysis of how personal characteristics combine with situations to provide an optimal environment for successful occupational performance. In an ideal world, an occupational therapist would interview the patient and identify that person's goals, then structure the treatment sessions around personal goals in the setting in which the meaningful occupations need to be performed, or in a situation where the person will get the most support to perform successfully. Because motivation is an important part of the *person*, participants for this study were asked if they wanted to learn cooking skills. When participants signed the consent form, they signified that they were interested in learning cooking; hopefully, that also indicates that this is a *meaningful occupation* for them. Cooking is a context-bound activity. One's home is considered an appropriate context (*environment*) in which to carry out the cooking.

A cognitive-behavioral approach (Duncombe, 1997) guided the interaction between the therapist and the patient during the treatment sessions. The higher cognitive level of the individual, the more cognitive the approach; the lower the cognitive level of the individual, the more behavioral the approach. The five principles (individualization,

collaboration, activity, empiricism, and generalization) were included. The therapist included the principles of *individualization* and *collaboration* by asking about the participant's cooking goals at the beginning of the study and how he/she was progressing at the beginning of each session. Participants were asked to identify what cooking they had done during the week and how successful they thought they were. Cooking was the *activity* in the cognitive-behavioral treatment and graded task assignments were used throughout. Homework was recommended as a way of creating the habit patterns that are a part of learning. Social and tangible reinforcements were provided. (Participants had the undivided attention of two research associates during the study sessions and, when participants performed well, they received verbal praise. The food prepared at each session and the money provided at the end of the study served as tangible reinforcers.) *Problem-solving* was included when possible, e.g., when a participant was having difficulty with a particular aspect of the task, the participant and the therapist worked on a solution together. *Generalization* was the goal of the treatment. The participants were reminded throughout each session that they were learning cooking skills to use them in their homes.

The cooking skills learned were identified through an activity analysis of rudimentary requirements of cooking. These were labeled *Cooking Guidelines* and included: wash hands before beginning, clear a place to work, get out equipment and ingredients, follow directions, use the stove safely, handle hot items safely, store all unused food, wash/dry and put away all equipment, clean work surface, and enjoy what you have prepared (See Appendix).

In accordance with Toglia's (1998) Dynamic Interactional Model for Cognitive Rehabilitation, an activity analysis was performed on each food preparation activity used in the study. This model is also built on the three elements of occupational therapy treatment: the individual, the task, and the environment. Toglia identified the importance of understanding the cognitive abilities of patients, the fit between the task demands and the "learner characteristics" (Toglia, 1998, p. 11), and the type of environment in which the individual would be using the task. As introduced in Chapter II, Toglia further described transfer of learning and the aspects of the task and the environment that would enable the person to both transfer learning from one setting to another as well as generalize learning to other tasks. She defined the concepts of near and far transfer of learning for people with cognitive deficits. When a task is very similar to another task, i.e., only one aspect of the task is changed, and an individual is expected to use what they learned previously to complete that task in the same environment, that is near transfer. The more different the task is, or the more different the environmental demands are, the more one moves toward far transfer. She demonstrated that with individuals with cognitive deficits, one should start with near transfer and gradually move toward far transfer until the cognitive task is beyond the abilities of the patient. An understanding of the aspects of each activity and the importance of changing as few of those aspects as possible to provide an opportunity for an individual with cognitive disability to transfer learning from one activity or situation to another guided the selection of activities for the treatment sessions

The lessons were structured to take into consideration the concept of near transfer of task (Toglia, 1998) since the context would be changed for the clinic group. During Session #2, participants made a sandwich, emphasizing 7 of the 10 *Cooking Guidelines*; during Session #3, they made ramen soup during which all 10 of the "guidelines" were followed. Cooking the ramen soup was very similar to making cooked pudding, both in steps of the task and similarity of materials.

Research Procedure

All participants were seen five times. The first four sessions took place in either the clinic or the home of the participant depending on the group to which the participant was assigned. One week elapsed between each of the first four sessions. Cooking lessons were given to all during the first three sessions. On the fourth session, cooking skill was assessed to determine if learning had occurred. Then all participants were seen in their homes within one to two days of the fourth session. At this time, cooking skill was again assessed.

All participants were given the KTA-M, a cooking skills assessment in which pudding is prepared, on the first, fourth and fifth sessions. The first administration of the KTA-M was for cooking skill baseline data; the second administration of the KTA-M, on the fourth session, was to determine learning in the context in which the skills were taught. The final administration of the KTA-M occurred one to two days after the 2nd administration to determine transfer of learning. To guard against researcher bias, student research associates (SRAs) who were trained in the research protocol and

administration of the KTA-M but who were blind to the purpose of the study carried out the testing and cooking sessions.

Research Associate Training

A series of three training sessions were mandatory for research associates (occupational therapy students). They first learned about the KTA-M and practiced giving it to each other. Four training tapes were made of the KTA-M being given to adults. Three of the tapes were made with adults who do not have schizophrenia; one tape was made with an individual with schizophrenia. Students and the instructor watched the tapes and scored the test according to the KTA-M scoring guide. After each test, we compared the scores given for each item and talked about the differences so that everyone was clear about the scoring. Finally, we watched one tape we hadn't seen before and scored it independently. The scores were compared and all fell within the point range required for inter-rater reliability (r=.95).

During the last training session, the cooking sessions were demonstrated and students practiced what would happen during these three encounters with the participants. A training tape was also made to demonstrate the cooking sessions.

A written protocol (see Appendix) for each session was provided for SRAs and they were encouraged to borrow any of the teaching tapes to practice before meeting with each of their participants. SRAs signed a contract (See Appendix) regarding confidentiality and agreed to honor their commitment to the study and the participants by meeting with their assigned participants for all five sessions. SRAs also agreed to write

in journals each time they saw a participant to record when they met with the person, where, and any observations they thought might have a bearing on the participant's involvement in the study. SRAs worked in pairs with participants; thirty-two students were involved in the study.

Descriptions of Sessions

Session 1. Participants were given the KTA-M. While the pudding was cooling, a cooking lesson was presented. Each participant was given a laminated copy of the *Guidelines for Cooking*. Each of the ten items on the list was discussed with the participants, using the task of cooking pudding as an example. The participants were asked to remember how they had met each of the "guidelines" while cooking the pudding. If the participants needed help with a particular item, the discussion focused on what they did and what they could do differently, eliciting suggestions from them. If they performed a "guideline" well, they were praised for their performance and were asked to confirm that they agreed they had done well. For those participants seen at home, the "guidelines" were hung in their kitchens. Those participants seen in the clinic were given the "guidelines" and were asked to hang them in their kitchens as they were hanging in the clinic.

Having completed the cooking lesson portion of Session #1, the participant was told what would happen during Session #2, i.e., that he/she would make a sandwich with two ingredients and how that related to the *Guidelines for Cooking*. The participant was asked what kind of sandwich he/she would like and what kind of bread he/she preferred.

Choices of fillings were limited to: peanut butter and jelly, ham and cheese, turkey and lettuce. Bread choices were white and wheat. On several occasions, substitutions were made to the above list. One participant wanted lettuce and tomato, one person requested onion, and another participant requested pickles. Mayonnaise and mustard were also available.

Before leaving the session, participants were given a weekly chart (See Appendix) to check off when they prepared (or participated in preparing) their own meals during the week and when they used the stove. They were thanked for being available for that Session and were told when the next meeting would take place.

During the week between Session #1 and Session #2, a telephone call was made to the participant or the staff at his/her group home to confirm when the next session would be. If the person was being transported to Boston University, the participant (or staff) was told how that was being done (cab or principal researcher) and when the transportation would arrive. When possible, the participant was reminded to fill in his/her weekly chart. In addition, the research assistant called again the day before or the day of the session to confirm the appointment.

Session #2. Participants were welcomed to this Session and were asked how their week went, both in terms of meal preparation and to determine if anything transpired during the week that might have affected their practice during the week or the participant's performance or participation in this Session. They were asked for their weekly schedule and, if it was unclear how they filled it out, they were asked to explain what their markings meant.

If the person was in the clinic, the SRA took the *Guidelines for Cooking* down from the wall to go over it with the participant. If the person was being seen in his/her home, the SRA located the "guidelines" with the assistance of the participant, if it was not hanging in the kitchen where it had been placed the week before. Seven items from the "guidelines" were used in this session. Each item was discussed before and after making the sandwich. Before making the sandwich, participants were asked to think about how they were going to meet each guideline, for example, Guideline #2 is, "Clear a place to work." The SRA would ask where the participant planned to make the sandwich and think about what might have to be moved. In essence, all steps of making the sandwich were discussed, according to the "guidelines", before the sandwich was made. Then each participant made the planned sandwich with guidance/praise, as appropriate, during the process. (See Appendix: Procedure for Research Assistants). Finally, while the participant was eating the sandwich, or after they finished eating it, or after they wrapped it to eat later, the participant and the SRA again went over the seven "guidelines" involved in making a sandwich, reinforcing what the participant did that was good and what still might need attention.

Before ending the session, the participants were given another weekly chart to fill out and were told that the next week they would be making a kind of noodle soup (ramen). Participants were then thanked for their time and reminded when the next session would be.

As before, the SRAs made phone calls between sessions to confirm plans for meeting again and transportation arrangements.

Session #3. As in previous sessions, participants were welcomed and some time was spent asking how the week went. They were asked for their weekly schedule and, if it was unclear how they filled it out, they were asked to explain what their markings meant. The person was told they would be making ramen, and they were asked if they had ever made this kind of soup before. As in Session #2, the SRAs went through the *Guidelines for Cooking* with the participants planning, in advance, how making the soup related to the ten items on the list. Examples from the previous two weeks were used if the person didn't remember how they had handled some of the items on the list. In essence, they "talked out" the making of the soup before beginning.

Next, the participants made the soup. They were asked if they would like some help with the steps involved in making this soup, or if they would like to do it on their own with some guidance from the students. Again, the SRAs stressed that the reason for making the soup was to make the *Guidelines for Cooking* "automatic," so the participants won't have to think about the steps one goes through in cooking anything. They were reminded to use the *Guidelines for Cooking*. When they did, they were praised. If they appeared to be working without benefit of the "guidelines", they were asked what step they were on or to read the next step in the process. SRAs were given the instructions to be very attentive and to intervene if the person did something that did not fit with the "guidelines" or that was unsafe.

After the soup was completed, the participants and the SRAs went over the "guidelines" again. Participants could eat the soup while it was hot and go over the "guidelines" afterward, or they could take the soup home with them if they were in the

clinic, or put it in a container in the refrigerator in their home, if they were being seen at home. Plastic containers were provided for this purpose. In going over the "guidelines", participants were praised if they remembered a guideline or performed it well. If they needed a reminder, the students and participants discussed it. If participants wanted to save all or part of the soup for later, they had a discussion about safe storage of food.

At the end of the session, participants were given another copy of the weekly schedule. They were informed that they would be seen twice the next week, on two consecutive days, and that they would be making cooked pudding both times. They were also reminded that this would be the end of the study and that, on the last day, they would receive $50.00 for their participation in the study.

Reminder calls were made again between Sessions #3 and #4. For participants who were seen in the clinic, arrangements were made to use the kitchen in participants' homes for the last session. If this was a group home, a staff member was asked to make sure that the rest of the residents agreed that it was okay to use the kitchen at this time.

Session #4. Participants were welcomed and asked how their week went. Weekly charts were collected and checked to make sure the SRA understood how the charts were filled out.

The KTA-M was given as in Session #1. There was no discussion of the *Guidelines for Cooking* at this session.

At the end of the session, the participants were reminded that they would be seen again the next day in their homes. They were reminded that it would be their last time with the SRAs and that they would receive their $50.00 participants' fee at that time.

The day of the last session, the SRAs called to confirm.

Session #5. Participants were greeted and given the KTA-M. They were given their $50.00 and were asked to sign that they had received their money (see Appendix). They were also asked if they might be interested in participating in another study or in doing more cooking in the future. (This question opened the possibility of doing a follow-up study with the same participants.) SRAs said their good-byes, making sure that the participants understood that this study was over. When staff were involved, SRAs also said good-bye to the group home staff and explained that the study was over in the event participants asked questions about when they would see them again.

Institutional Review Board Approval

Institutional Review Board Approval was sought and granted from the Boston University Charles River Institutional Review Board, the Department of Mental Health Committee on Research, and Vinfen Corporation, the administrator of the group homes.

Instrumentation

Four instruments were used in the gathering of data for this research study: a Questionnaire, a Checklist, the Allen Cognitive Level Screen (ACLS-90) and the Kitchen Task Assessment – Modified. They are each described below.

Questionnaire

Basic identifying information was gathered on the questionnaire, such as the individual's name, age, gender, and living situation. In addition, the participants were

asked to provide information about their meal preparation habits and dietary restrictions, e.g., being lactose intolerant or diabetic. Finally, they were asked if they had specific cooking equipment in their homes: cooking spoon, measuring cup, potholder, small saucepan. Information from the questionnaire was used to aid in matching of participants and to determine eligibility, i.e., the study was designed for individuals between the ages of 25-65. (See Appendix for a copy of the Questionnaire.)

Checklist

A Weekly Checklist in grid format was created as a simple way for participants to keep track of the meals they ate for which they helped with the preparation or, specifically, used the stove. The meals listed were: breakfast, lunch, dinner, and snacks. Seven blank spaces across the top of the grid allowed the SRAs to personalize the checklist for each participant by writing in the days of the week starting with the day after the person was seen. There were a total of 56 spaces on the chart with a place at the bottom for comments. The purpose of the Weekly Checklist was to provide data to answer Question 3: Is there a correlation between practice, as self-reported and increase in cooking skill. (See Appendix for a copy of the Weekly Checklist)

The Allen Cognitive Level Screen (ACLS-90)

The Allen Cognitive Level Screen (ACLS-90) is a screening instrument designed to measure an individual's cognitive abilities. It is a leather lacing task that has an inter-rater reliability of .91. It was standardized for people with schizophrenia, depression, and with a control group of individuals without mental illness. With adult populations under age 65, there was no significant difference due to age or gender.

Predictive validity was determined with reference to patients' returning to work (Chi Square = 33.54, $p<.001$, N=32). Concurrent validity was established with the Brief Psychiatric Rating Scale (r=.53 at admission) and with the Block Design of the Wechsler Adult Intelligence Scale (r=.46 at admission). Test-retest reliability was established as .75 using a Spearman Rank Order Correlation. Scores range from 3.0 to 5.8 (Allen, Kehrberg & Burns, 1992).

The ACLS-90 was chosen to provide a basis on which to match participants by cognitive level in order to have people in both groups with similar abilities to learn and to transfer learning. With a larger sample size, randomization might have taken care of this, but, although the sample size was appropriate based on a power analysis, it might not have been large enough to cancel out cognitive differences. According to Allen (1992), those people with higher cognitive levels (above 5.0) should be able to learn new skills and transfer those skills to new settings. Those people with cognitive levels below 4.8 should have difficulty learning new skills and transferring those skills.

The Kitchen Task Assessment – Modified (KTA-M)

This instrument is based on two assessments, the Kitchen Task Assessment (KTA) (Baum & Edwards, 1993) and the Rabideau Kitchen Evaluation – Revised (RKE-R) (Neistadt, 1994).

The Kitchen Task Assessment requires the client to cook pudding. It was standardized with 106 patients with Senile Dementia, Alzheimer's Type. The mean age of the sample was 71.75 years (range 53.8-85.4). Scores range from 0-18. Interrater reliability was established at .853. The correlation coefficients of all six variables and

total task ranged from .72-.84. This suggests that all components contributed to the overall score. In a factor analysis and principal component analysis, all factor loadings were greater than .88. Finally, for construct validity, the KTA was correlated with three valid and reliable neuropsychological tests (Baum & Edwards, 1993).

The Rabideau Kitchen Evaluation – Revised was created for use with individuals with cognitive deficits resulting from brain injury. It requires the client to prepare a hot beverage and a sandwich with two ingredients. The tasks required to make a hot beverage and sandwich are each listed separately (similar to an activity analysis) and the individual is scored based on how independently he/she can perform each of the steps of the tasks.

In a pilot study (Duncombe, 1997), the KTA was paired with the Rabideau Kitchen Evaluation – Revised. The tasks of the RKE-R were not novel tasks for those who were targeted as possible participants in this study, and many were capable of preparing instant coffee or tea and making a sandwich. The purpose of the assessment for this study was to evaluate cooking skill, not to identify which automatic habit patterns had already been developed by people with schizophrenia. The cooked pudding of the KTA, on the other hand, was a novel task. None of the participants in the pilot study had ever made cooked, as opposed to instant, pudding. This was also a good indicator of the participant's comfort with reading instructions, following directions and using judgment while cooking on the stove. The scoring of the KTA, however, was not sensitive enough to determine the amount of skill the individual possessed. The KTA was not designed for this purpose; its original goal was to determine what type of caregiver support was

required for someone with dementia to live safely at home. However, the scoring for each component of the task, as provided by the RKE-R, was more sensitive to the skill of the individual. Therefore, the cooked pudding task of the KTA was retained with a change in scoring to become the Kitchen Task Assessment – Modified. The scoring is similar to the RKE-R. It includes a list of all of the activities involved in the cooked pudding task. Scoring ranges from 5 = participant requires no assistance to 0 = participant is unable to perform the component step and requires direct intervention from the supervisor to complete the step. There are 40 items and the range of possible scores for the test is 0-200. (See Appendix).

The KTA-M has face validity. An inter-rater reliability study of the KTA-M was completed. A group of seven research associates was trained in giving the KTA-M and, through both video-taped and live coding sessions, an intra-class correlation of 0.97 was attained using Formula 2,1 (Shrout & Fleiss, 1979). This is the most rigorous of intra-class correlation statistics and results in the ability to generalize to other administrations of the same test as well as ability to generalize to other raters. The SRAs were blind to the purpose of the study and administered the KTA-M twice, two to four weeks apart, to 19 individuals (12 men and 7 women) who were between the ages of 34 and 63 and who had a diagnosis of long-term mental illness. An intra-class correlation for test-retest reliability, using the same formula as above, was ICC = 0.95.

Chapter Four

Data Analysis and Results

There were 46 participants in the study, however scores of two participants were dropped for some aspects of the analyses due to missing data. Because data were available for all 46 participants on the first administration of the KTA-M, all data were included in a comparison of the two groups on that first test score as well as on the first Question regarding the possible correlation between the ACL and the KTA-M. All other analyses are based on the results of the remaining 44 individuals.

Hypothesis #1

The functional living skill of cooking, as measured by the Kitchen Task Assessment – Modified (KTA-M), will be learned better when taught to individuals with schizophrenia in the individual's home than when taught in the clinic.

To determine the result of the first hypothesis, a change in score from the first two administrations of the KTA-M, at sessions 1 and 4, was calculated for all participants. Results for both groups were highly significant. The group taught in the clinic increased an average of 6.6 points on the KTA-M ($t = 5.57$, $df = 21$, $p < .0001$). The group taught in the home increased an average of 6.7 points on the KTA-M ($t = 7.81$, $df = 21$, $p < .0002$). Summary statistics for all three administrations of the KTA-M are in Table 2.

Note that there was greater variability among those in the clinic group; those individuals with the two lowest scores were both in the clinic group.

Table 2: Summary statistics for all three administrations of the Kitchen Task Assessment - Modified

	Mean	SD	Median	Range
KTA				
1st Measure: Overall	178.6	21.9	184.0	79 – 197
Clinic	172.9	28.4	181.0	79 – 197
Home	184.3	10.2	186.5	150 – 197
2nd Measure: Overall	185.3	21.9	192.5	80 – 200
Clinic	179.5	29.0	192.5	80 – 198
Home	191.0	8.2	193.0	165 – 200
3rd Measure: Overall	189.4	17.0	195.0	104 – 200
Clinic	184.6	22.4	194.0	104 – 199
Home	194.2	6.4	196.5	177 – 200

To look at the relationship between cooking skill and context, a multiple regression analysis was employed. This was chosen since it was determined that,

although the two groups were matched by cognitive level, cooking experience, living situation, age, and gender, they were significantly different ($t = 2.07$, $p < .026$) on the first administration of the KTA-M. The multiple regression statistical tool provides an analysis of the relationship between a dependent variable (cooking skill as determined by the change scores from KTA-M #1 to KTA-M #2) and several independent variables that might have an effect on outcome: learning context (clinic vs. home), cooking skill/experience (high vs. low), and cognitive level (as identified by the ACLS-90: low, 3.3-4.1; medium 4.2-4.8; high, 4-8-5.4). In a simple regression analysis, using only location as a predictor, on average, participants in the clinic had 1.3 points more of an increase in the KTA-M compared to participants who learned at home. This difference was not significant ($t = -0.06$, $df = 42$, $p<0.95$). When all predictors (cooking experience, and cognitive level, initial KTA-M scores identified in tertiles because of the initial difference in scores) were included in the regression model, the results indicate that, although still not significant ($t = -1.21$, $df = 37$, $p<0.23$), the participants in the home performed, on average, 1.8 points higher than those who learned in the clinic, a small to moderate effect ($d = 0.40$). Participants with initially low KTA-M scores had significantly more change from score 1 to score 2 (pre and post-learning) than those individuals with initially high KTA-M scores ($t =-3.39$, $p<0.001$) and the difference in learning between those with low and those with medium scores approached significance ($t =-1.89$, $p<0.067$). See Table 3 for beta coefficients, T-scores, and probability levels of all predictors. Note that the rule of thumb is that one can add one predictor for every 10 participants. There are 6 predictors and 44 participants. The regression model was

computed with and without a variety of predictors and the model remained stable throughout indicating that the additional predictors do not have an artificial impact on the outcome. Therefore, Hypothesis 1 is rejected.

Table 3: Results of Regression Analysis Testing for Hypothesis #1

Predictor	df	β	T	p-value
Change scores (KTA-M #2-KTA-M #1), Clinic vs. Home	37	-1.8	-1.21	.2325
KTA-M medium vs. KTA-M low	37	-4.2	-1.89	.0668
KTA-M high vs. KTA-M low	37	-10.1	-3.39	.0017
Cooking experience vs. no cooking experience	37	3.7	1.02	.1157
ACLS-90 –medium vs. ACLS-90 low	37	1.8	1.02	.3158
ACLS-90-high vs. ACLS-90 low	37	3.4	1.70	.0979
Model R^2 = .29				

Hypothesis #2

The functional living skill of cooking, as measured by the KTA-M, will be performed better at home when people with schizophrenia are taught in the home (same context) instead of in the clinic.

To test the second hypothesis, another multiple regression analysis was computed. Cooking and ACLS-90 scores (low, medium, high) were also included as predictors in the regression model. See Table 4. For this model, only final KTA-M scores were utilized as the outcome variable. This was done because, if one compared change scores from the last session in the clinic to the home performance for the clinic group, one would not know if any change was due to transfer of learning or support provided by the home environment. The two variables appear to be confounded. Participants performed better in the home on the initial KTA-M administration and both groups learned in their respective settings. There was not a significant difference between the two groups in learning. Therefore, if those taught in the clinic were able to transfer their skills to the home environment, and, if the home environment supported their performance as it did for those participants first seen in their homes, final KTA-M scores should be similar. If however, the better performance on the first administration were due to a failure of randomization, the results would be inaccurate.

Table 4: Results of Regression Analysis Testing for Hypothesis #2

Predictor	df	β	T	p-value
KTA-M #3 score, Clinic vs. home	39	-8.7	-2.03	.0489
Cooking experience vs. no cooking exp.	39	9.5	1.97	.0562
ACLS-90-medium vs. ACLS-90 low	39	9.5	1.71	.0959
ACLS-90-high vs. ACLS – 90 low	39	15.1	2.48	.0174
Model R^2 = .37				

Results indicate that the clinic group had lower final KTA-M scores than the home group ($t = -2.03$, $p < 0.049$). Therefore, Hypotheses 2 is accepted.

All participants learned in their respective contexts, but those who learned in their homes performed significantly better at home on the final KTA-M than those who learned in the clinic, indicating a difficulty with transfer of learning from the clinic to the home. Those participants with high ACLS-90 scores (4.8-5.4) performed significantly better at home than those with low ACLS-90 scores (3.3-4.1) ($t = 2.48$, $p < 0.01$). Analysis of individual results reveal six (6) individuals in the clinic group whose scores decreased an average of 7.67 (range 3-13) points from KTA-M # 2 to KTA-M #3; three (3)

individuals in the home group decreased an average of 1.33 (range 1-2) points from KTA-M #2 to KTA-M #3.

Question #1

Is there a correlation between cognitive levels, as defined by the Allen Cognitive Level Screen (ACLS-90), and cooking skill, as measured by the Kitchen Task Assessment – Modified (KTA-M)?

Two Pearson Product Moment Correlation tests were performed. The first computation looked at a possible correlation between the ACLS-90 and performance on the first KTA-M. There was a high correlation ($n=46$, $r=.55$, $p<.0001$) between cognitive level scores and cooking skill. Then, because the second administration of the KTA-M indicated one's ability after learning, a second correlation test was performed. This test yielded a high correlation as well ($n=46$, $r=.44$, $p<.002$).

The answer to Question 1, therefore, is yes.

Question #2

Is there a correlation between cognitive levels, as defined by the Allen Cognitive Level Screen (ACLS-90) and ability to transfer learning?

An analysis of variance of regression was computed to determine with what degree of confidence the scores of the third administration of the KTA-M could be predicted given the cognitive level score and the score on the second KTA-M. Only scores of the clinic group were utilized in this analysis because there was no transfer of

learning required of those participants who were taught in their homes. A very high correlation was found (df=21, F =52.49, P < .0000).

The answer to Question 2, therefore, is yes.

Question #3

Is there a correlation between practice, as self-reported, and increase in cooking skill?

Participants in the study were asked to fill out a chart, each week for three weeks, identifying by checkmark those meals that they fixed themselves and when they used the stove. Practice scores were determined for individuals by adding all the checkmarks on their three charts together. To determine if there was a correlation between amount of practice and learning, a Pearson Product Moment Correlation was calculated on their practice scores and their change scores. Change scores were created by subtracting the participant's score on the second administration of the KTA-M, the score indicating learning, from the score on the first administration of the KTA-M, the baseline score. Only 29 participants filled out all three sets of their weekly charts, therefore, the Pearson Produce Moment Correlation was computed using only those 29 sets of scores. A very low correlation was found between practice and amount of change (df=27, r = .256, r^2=.066).

The answer to Question 3 is, therefore, no.

Chapter Five

Discussion

The hypothesis that people with long-term, persistent schizophrenia would learn a functional living skill better if taught in their homes was not supported. The participants in the study learned significantly well in both the home and the clinic. One of the difficulties in clinical research is controlling for all the possible variables. Although this was a quantitative study, there are some qualitative aspects, especially of the two contexts, that must be described and discussed because they are relevant to difficulty with controls in this study and have implications for future clinical studies and for occupational therapy treatment.

The clinic used for the study was a classroom with a kitchen on a quiet floor of a University building. Participants were mostly seen during the evening, on weekends, and in the summer. At all of these times there were few people in the building and no one to disturb the quiet of the clinic room where the study was taking place. The participants had the individual attention of two research associates during each cooking session. Because the kitchen in the clinic was not used for cooking purposes on a regular basis, the counters were completely clear, the sink was empty, and the refrigerator was not full. In short, there were no distractions of people, noises, or extraneous materials. Thirty-

eight of the 44 participants lived in group homes where the kitchens were cluttered with equipment and supplies and there were many distractions both in and outside the kitchen. There were numerous incidents in which staff interrupted the cooking sessions to talk to the research associates or the participants. Several of these incidents resulted in a change in attitude on the part of the participant whose train of thought had been sidetracked, who had been chided for something, or who had been told that the reimbursement for the study would have to be given directly to the staff. Other residents of the home frequently wandered into the kitchen and interrupted the flow of the cooking sessions by trying to gain access to a part of the kitchen where the participant was currently working, talking to the participant, or vying for the attention of the research associates. Occasionally an altercation between several residents took the attention of the participant. Only one of the apartments was as quiet and undisturbed as the clinic. The other apartments were very cluttered, but there were few interruptions.

In addition to the difference in activity level between the two contexts, there was a difference in the physical environment as mentioned previously. Because the SRAs were following a research protocol, all supplies and equipment were available. The only equipment and supplies in the clinic were those provided for the study. However, when the participant was seen at home, the SRAs were instructed to put the perishable supplies in the refrigerator and the non-perishable supplies and equipment in the cabinets of the participant's kitchen. Occasionally it was difficult for the participant to find the right supplies in the group home because of the abundance of equipment and food already in the kitchen.

It was thought that the familiar, comfortable context of the home environment would support learning, based on studies in which occupational and physical therapy patients carried out their rehabilitation regimes at home better than they did in the clinic (Head & Patterson, 1997; Young & Forster, 1992; Gladman, Lincoln, & Barer, 1993). The homes in these studies appeared to be single-family homes that differed in activity level from the group homes in this study. Research indicating difficulties in learning due to a changing, natural environment must be included here since the environment of many of the group homes fits more the description of a changing natural environment than the supportive home environment that was anticipated (Brown, 1999; Brown, Rempfer, & Hamera, 2000). Inattention or inability to focus is one of the cognitive dysfunctions identified in this population (Cornblatt & Keilp, 1994). The fact that the participants were able to pay attention and focus in these chaotic homes enough to learn as well as in the quiet, uncluttered clinic may be related to the comfort they felt in the home context. One wonders if the same amount of learning would have taken place in a disorganized clinic in which there were as many interruptions as there were in the group homes. Conversely, if the group home were less chaotic and more like the clinic, while still providing the contextual and emotional support expected in a home setting, the question as to whether an individual with cognitive impairments learns better in the home than in the clinic could still be asked. Further studies documenting the effect of a group home environment on learning could be carried out with more of an effort to control for the complexities in the environment.

Based on observations and entries in the journals of SRAs, the following supports are listed as important to learning: a quiet, uncluttered environment, the undivided attention of the therapy practitioner, and all supplies and equipment on hand and where they should be. Previous research supports determining the best context for treatment through consultation with the learner. (Brown & Bowen, 1998). It is recommended that a therapist should first look for criteria that might contribute to and, conversely, obstruct learning and then discuss the treatment setting with the client.

Future research might focus first on a follow-up study with the participants in this study to determine if context had an effect on sustention of gain. In other words, are those who learned at home better able to use the cooking skills in six months than those who learned in the clinic?

In reference to variables in the two environments, two incidents may have contributed to the lack of difference between the two groups in learning. First, each participant was given a laminated copy of the *Cooking Guidelines* to refer to when they were doing any cooking during the week. The theory behind this was similar to giving handouts in a classroom and is congruent with the Cognitive-Behavioral approach to treatment in which individuals are given homework to do between therapy sessions (Duncombe, 1998). The *Cooking Guidelines* on the kitchen wall were also expected to add to the environmental support and contextual cueing that might be part of working in an individual's home. (This is also similar to what happens in current treatment in which clinic out-patients are given exercises to do or tasks to complete at home with the

therapist not knowing how the homework is being carried out; therapists who provide home care are able to see how the patient plans on carrying out the homework.) The rationale for providing the *Cooking Guidelines* was that participants who were seen at home would help choose a good location on the kitchen wall and would be aided in mounting the "guidelines" for use during the week. The participants learning in the clinic would be asked to take the C*ooking Guidelines* home and were given directions to hang them in their kitchen in a location where they would be able to look at them while cooking during the week. It has been reported that patients frequently do not do at home what they are asked to do in a clinic (Gladman, et al., 1993). Therefore, one planned variable between the home and clinic groups was whether or not the C*ooking Guidelines* were actually in an individual's kitchen with the assumption that not all of those taught in the clinic would actually place their copies of the C*ooking Guidelines* on the wall of the kitchen. However, because participants were matched and randomly assigned to groups, and because there were as many as 6 participants from a particular group home in the study, even those participants learning in the clinic saw the C*ooking Guidelines* hanging in the kitchen of their home if another resident of the same group home was also in the study and was learning at home. The participants treated in the clinic had the same benefit of the *Cooking Guidelines* being placed in a location that might aid in their cooking practice during the week as those participants who were seen at home.

A similar concern about control occurred with equipment, specifically measuring cups. A number of measuring cups were purchased for the study. All the measuring cups were exactly alike and measured more than 1 cup so that someone would have to measure

the liquid accurately, not merely fill the cup to the top. A measuring cup was placed in the clinic and one in each tote bag of equipment taken by SRAs to individual's homes. The protocol called for giving equipment to those participants at home who did not have equipment so that they would be able to use that equipment during the week. A number of measuring cups were given to participants, or accidentally left in homes, and more were purchased. However, no measuring cups could be found exactly like those initially purchased. The new cups also measured more than one cup, but some new cups measured up to 2 cups and some measured 1½ cups. Therefore, when measuring cups were replaced, not all tote bags contained uniform measuring cups. SRAs picked up a tote bag each time they went to see a participant at home and, in numerous instances, SRAs reported that the measuring cups were different from those used earlier. This may have made it difficult for the participant to measure on the post-learning-test. The measuring cup in the clinic never changed. This was a regrettable error and a lesson in the importance of uniformity of equipment for this researcher and, hopefully, for others.

It is true that a home environment is similar to a natural environment in that it is constantly changing (Brown, 1999; Brown et al., 2000), and that, if a kitchen is cluttered and chaotic, one must learn in that environment if one is to learn. However, in a study comparing the home context with a clinic context, it is important to control for all that can be controlled, i.e., not add to the chaos or confusion, especially when the clinic environment is stable. It is recommended that, in future studies, a better attempt be made to control for as much of the physical environment and the learning situation as possible.

One final concern in reference to Hypothesis #1 is that of the Hawthorne Effect in which participants in research studies perform better in order to please the researchers (Portney & Watkins, 1993). All participants knew who the principal researcher was and that the study was of special interest to her because she spoke at all recruitment meetings and signed the letter describing the study. She then met all participants initially while screening for appropriateness for the study, giving the questionnaire, and performing the cognitive level test. Student research associates who were blind to the purpose of the study were trained to carry out the research so that researcher bias would not enter into the results of the study. However, because taxis were unreliable and some participants were not allowed to ride alone in taxis, the principal researcher provided transportation for all of the participants in the clinic group. Transportation time between the participant's home and the clinic varied between 10 and 40 minutes. Although the principal researcher was very careful not to talk about anything related to the study during the car ride, she conversed freely about general topics with each participant in the clinic group. She did not have this same relationship with the participants who were part of the home group. It is possible that those in the clinic group did as well as those in the home group because they wanted to please the principal researcher.

The second Hypothesis, that participants taught in the clinic would perform less well in their homes than those participants taught in their homes, was supported. However, one needs to be careful in drawing conclusions from this. The home group performed better on the first administration of the KTA-M than did the clinic group. One might ask if the familiarity of the home environment did, in fact, support performance

might ask if the familiarity of the home environment did, in fact, support performance more than did the clinic environment (Park, Fisher, & Velozo, 1994), or if, even though individuals were matched, randomization favored the home group. To determine transfer of learning, under normal circumstances, one would compare the differences between scores on KTA-M #2 and KTA-M#3 for the home and clinic groups. The decision to use only scores from the KTA-M #3 on the multiple regression analysis was based on the belief that the difference between groups in the KTA-M #1 scores was due to a lack of familiarity of context for those in the clinic and that, if the home environment supported the clinic group on the last assessment at home, as it appeared to support the home group on the first assessment, the two groups should be similar on the final administration of the KTA-M, but they were not. Several competing hypotheses can be suggested: the home context appeared not to support the clinic group when they were tested at home during the final session; the clinic group was unable to transfer their learned skills from the clinic to the home environment (of the 22 participants in the clinic group, 6 [27%] were unable to transfer their learning to the home environment); or group differences existed with variables that were not anticipated or measured resulting in poorer skill in the clinic group.

If the assumptions on which this analysis was based are true, it appears that, when teaching a functional living skill that will be used routinely in one location, like one's kitchen, the skill is best taught in that specific context. All kitchens are different, for example, equipment is stored in different places, and stoves may be gas or electric with controls that function differently. To avoid some of the difficulty encountered in data

analysis in this study, future research could match participants on initial scores or provide an additional assessment to be used as a covariate.

There was more variability in the clinic group and the two individuals with the lowest scores on the initial assessment were both in the clinic group. Again, was this a failure of randomization or, were the low scores due to unfamiliarity with the clinic setting? The individual with the lowest scores (a 79 and an 80 on both clinic administrations of the KTA-M) scored 158 on the third administration of the KTA-M which was presented one day after administration #2. A main difference was that the third administration was in the individual's home.

When participants with cooking experience or current cooking responsibilities were compared to participants who had little or no previous experience and were not currently cooking in their residences, those with cooking skill did better than those with no skill. Although not significant ($t = 1.97$, $df = 39$, $p<0.056$), the difference between the two groups approached significance. There were only three cooking lessons. It is possible that those with little cooking experience could have done better with more cooking lessons, or that those with cooking experience, or who were currently cooking, needed fewer lessons to learn the basic material. All of the studies of OT treatment reviewed for this study identified more than three treatment sessions (Brown, 1999; Hayes, Halford, & Varghese, 1991; Kielhofner & Brinson, 1989; McDougall, 1992; Taylor, 1983). The decision to provide three cooking lessons was based mostly on availability of resources, i.e., participants, SRAs, and money. Another reason was that

the sample size derived from a power analysis was 21 per group based on a d=1.05 alpha level of .05 (Brown & Munford, 1983; Hayes et al, 1991). Since a total number of 42 participants was needed, there was concern about possible attrition. Of the four studies identified by Hayes and Halford (1992) that taught life skills, the study by Kielhofner and Brinson (1989) was the only study that included numbers similar to this study (n=40). One of the other studies had a sample of convenience of all in-patients (Hayes, et al., 1991). The other two studies were conducted with small numbers of participants (McDougall, 1992; Taylor, 1983)]. Of the 40 original participants in the Kielhofner and Brinson (1989) study, there were 6 who didn't complete the study. Common sense seemed to indicate that the longer the duration of the study, the greater the possibility of attrition. This concern was coupled with the knowledge that occupational therapists are expected to reach treatment goals in shorter and shorter time periods (Stoffel, 1996). Finally, an ethical decision was made to pay the participants $10.00 a session for their time and to pay them at the end of the study so that they wouldn't leave without completing the study. Since there were a total of five sessions, not counting the screening session, there was a concern that it might be difficult to motivate participants to continue for a longer time period; it might be difficult for SRAs to arrange time in their schedules for a longer time commitment and more sessions would have cost more money. One suggestion for addressing the above concerns is to connect a study of this kind to an ongoing day program where the cooking lessons are considered part of the program and with current staff providing the sessions. Possibly more participants could be included, so attrition would be less of a concern. Paid staff would be involved on a daily basis as

opposed to having to rely on volunteer SRAs. There would be no reimbursement to the participants because the cooking lessons would be part of their ongoing treatment program.

Participants with high ACLS-90 scores (4.8-5.4) performed significantly better on the KTA-M than participants with low ACLS-90 scores (3.3-4.1) ($t = 2.48$, $df = 39$, $p<0.017$). Participants with moderate ACLS-90 scores (4.2-4.7) scored better on the KTA-M than those with low ACLS-90 scores ($t = 1.71$, $df - 39$, $p<0.095$). There appears to be a continuum of ability to learn from low to medium to high ACLS-90 scores. This finding supports the research indicating that some individuals with schizophrenia have difficulty learning and transferring learned skills to other environments (Braff, 1993; Brenner, et al., 1992; Bellack, 1992; Green, 1996; Green, et al., 2000). It appears that the cognitive level of a person with long-term non-paranoid schizophrenia or schizoaffective disorder may have an effect on the outcome of treatment when treatment includes learning a functional living skill. This supports the literature indicating that cognitive dysfunction interferes with one's ability to perform functional living skills (Klapow, et al., 2000; Knight, 2000; Sevy & Davidson, 1995; Spivak, et al., 1982; Tessler & Manderscheid, 1982) and reinforces the practice of using this information to make clinical decisions.

Park, et al. (1994) reported that patients performed better in their homes when given the same assessment in both the clinic and their homes. This study supports that research. In the Park, et al. (1994) study, the same individuals were given the two

assessments (The Assessment of Motor and Process Skills); some were given the assessment at home first and some were given the assessment in the clinic first. One difference between that study and this research is that, in this study, the same individuals were not assessed initially in both locations or, even, in the same location. The home group was assessed at home and the clinic group was assessed in the clinic. This design was chosen so that the clinic group would have no experience with the assessment at home to contaminate the results of the final home assessment. The two groups, however, were matched on cognitive level score, living situation, cooking experience, age, and gender. On the first administration of the KTA-M, participants who were assessed at home performed significantly better than those who were assessed in the clinic ($t = 2.01$, $p < 0.026$). Implications are that, when an occupational therapist assesses someone in a clinic setting, he or she may not have an accurate idea of what the individual is capable of doing. Additional differences between this study and that by Park et al. (1994) are the ages and the diagnoses of the participants. In the Park study, mean age was 82.2 years ($SD = 6.9$); mean age in this study was 45.5 ($SD = 8.5$); participants in the Park study ranged from well-elderly to elderly with a variety of conditions such as: visual impairments, hip and knee replacements, arthritis, and post coronary status. The value of the validation of the findings of the Park study is in the breadth of ages and diagnoses for whom it was found that functional living skills, specifically instrumental activities of daily living, are better assessed in an individual's home.

A significant correlation was found between cognitive level score on the ACLS-90 and performance in cooking skill both before and after learning. Based on the

theoretical literature discussing the ACLS-90, this should be the case (Allen, et al., 1992; Allen & Blue, 1998). The ACLS-90 has been correlated with numerous measures of mental state and mental processes (David & Riley, 1990; Mayer, 1988; Shapiro, 1992), however, very little research has been done to validate this clinically. One study found a correlation between the ACLS-90 and the Routine Task Inventory (RTI) (Allen, et al., 1992), a list of activities of daily living frequently accomplished by most people: grooming, dressing, bathing, etc. However, the routine task inventory can be presented as an interview or through direct observation. A difference has been found between one's stated abilities and one's actual abilities (Law, 1993), therefore, more validation with actual observation is suggested (Knight, 2000). The Allen Cognitive Level Screen, the Allen Diagnostic Module, and the Routine Task Inventory (Allen, et al., 1992) are all used extensively by occupational therapists to determine individual cognitive level and to identify appropriate treatment goals and activities. However, in the era of evidence-based practice, occupational therapists need more research to validate the effectiveness of assessment instruments with specific populations (Foto, 1996; Van Leit, 1996). This research reinforces the practice of using the ACLS-90 with individuals with long-term, non-paranoid schizophrenia and schizoaffective disorder to identify patients' cognitive levels and to determine appropriate treatment objectives. With more research, patients can be guided to activities that are appropriate for their cognitive level and can be provided with compensatory strategies for persistent cognitive dysfunction (Brown, 2001).

A very high correlation was found between a person's cognitive level as measured by the ACLS-90 and the ability to transfer learning. As the ACLS-90 scores increased, so did an individual's ability to transfer learning of the cooking task from the clinic to his/her home. Allen has stated that individuals with cognitive levels of 5.0 and higher should be able to transfer learning and individuals with scores of 4.0 and lower should not be able to transfer learning (Allen, et al., 1992). This research validates that information. There are major implications for this in the everyday practice of occupational therapists. If a patient scores below 4.0, a therapist could recommend that his/her learning of functional living skills should take place in the environment in which they will be used, as opposed to teaching them in a clinic or day program. A score of 5.0 or above would indicate that a person could learn in another location and transfer the learning.

No correlation was found between practice and increase in skill. There are several reasons why this might be an inaccurate result. The statistics are based on self-report. Since only 29 out of 44 participants remembered to keep track of their cooking practice, there is some indication that this was difficult to do. Several participants mentioned that their weekly chart was misplaced, or that someone in their group home had moved it. Others requested that staff remind them, but inconsistency of staff made this difficult. Finally, although Taylor (1983) believed that self-report was reliable with a small sample (n=8) of people with agoraphobia, the difficulty with self-report in this study is consistent with the finding by Law (1993) that self-report data is unreliable. The intention in this study was to remind participants via phone calls to fill out their chart

throughout the week. In most group homes there is a staff phone and a resident phone. SRAs found that residents' phones were frequently not answered or the participant did not want to come to the phone or was unavailable when they called. In some homes there was only a staff phone. In these cases, the staff offered to pass the message on to the participant, and there was no way to know if this happened.

In order to motivate participants to fill out their weekly practice charts or to highlight how the charts were to be filled out, SRAs individualized many of the charts with different colored markers. This is a variable for which there was no accountability. Records were not kept as to which participants were given special instructions or brightly colored charts. It is speculation, but possible, that those participants who received individualized practice checklists had more of a tendency to fill them out. Determining if this was the case would be an interesting and manageable research project for a clinician or a graduate student. Research literature and education theory indicate that practice does lead to an increase in skill (Brown, et al., 1989; Duncan, 1958; Ellis, 1965; Shea & Morgan, 1979; Sternberg, 1985). It is recommended that future research address this question with a more strict protocol, including realistic checks on self-report, if self-report is used. Although the importance of practice in learning may seem obvious, all aspects of occupational therapy treatment are subject to research to provide evidence on which to base practice (Foto, 1996; Van Leit, 1996).

This study was carried out in 4 apartments and 12 group homes. There are many difficulties in carrying out clinical research in so many different locations with this

number of participants. Multi-site clinical trials tend to be fraught with such difficulty (Kraemer, 2000). Single-case studies and qualitative research are recommended as ways to provide additional validation of the results of this study.

Previous studies reported difficulty with participant attrition (Kielhofner & Brinson, 1989) or in recruiting a sufficiently large number of participants to be able to generalize the results (Brown, Moore, Hemman, & Yunek, 1996; Graham & Wolfe, 2000; McDougall, 1992; Taylor, 1983). Fifty participants agreed to participate in this study. Forty-six completed the study; two people were not included because their diagnoses did not match those required for participation; one person left his residence with no word on where he had gone, and one person chose to not continue with the study because she felt it was too easy and that it would not be useful to her. Forty-six people, out of the 48 who began, completed the study. This is a retention rate of 96% and represents a large percentage of the sample, so attrition as noted should not negatively affect the results (Portney & Watkins (1993), but it is interesting to consider why the retention rate was so high.

One suggestion is that two students and the principal investigator gave individual attention to each participant. SRAs were directed to spend time talking with the participants about the events of their week since the last session in order to identify anything that might affect the participant's performance. Half of the participants were driven to the clinic by the principal investigator. In many instances, the trip took longer than 30 minutes each way. There was ample time for the principal researcher and these

participants to become acquainted with each other. Those participants who were seen in their homes were frequently "visited" by the principal investigator while students were working with someone else in the group home. Individual attention continued throughout the cooking lessons and, whenever a participant performed well, he/she was verbally reinforced. It is possible that this reinforcement led to a sense of self-efficacy; the more they did, the more they thought they could do, and their performance increased (Bandura, 1997). Their mental set (Rojewski & Schell, 1994; Sternberg & Frensch, 1993) enabled them to learn the skills and, in some cases, transfer those skills to home, because of the social context of the learning (Vygotsky, 1962), not in spite of the environmental context. One other study on social skills training reported a high retention rate and attributed it to intense staff involvement with participants in the training program (Liberman, et al., 1998). With these indications that staff involvement increases motivation and ability in people with long-term, persistent schizophrenia, more research should be conducted. In addition, the role of self-efficacy in learning is a topic that needs to be addressed in future research.

Another possible reason for the high retention rate is the monetary reward of $50.00 provided at the end of the five sessions. Although most participants received either weekly paychecks from their day programs or weekly stipends from their social security accounts, $50.00 was a large sum of money for many of them. Participants frequently asked about their money and were always told that they would get their money at the end of the cooking sessions. The decision to give the participants all of their money at the end was meant to motivate them to continue with the study, but holding it

until the end may have resulted in inaccurate scores for some participants. One woman, in particular, scored very low (a 79 and 80) during her first two visits in the clinic and participated minimally in her cooking lessons. She asked repeatedly about the money during all of the sessions as well as during her rides to and from the clinic. On the day she was to receive her money, she appeared to be more motivated to perform. She ordered Chinese food for dinner, knowing she would have the money by then, and scored better in her home (158) than would have been expected; she got a score of 80 the previous day. On reflection and after discussion with the staff at the group home, the motivation of the money increased her performance on that day only. If we had paid her $10.00 each session, we might have had more uniform results. This particular person had a low cognitive level score (below 4.0). It is possible that waiting five sessions for the money was too long a time between performance and the reward for her or that she didn't trust that she would actually get the money until the day on which the money was promised finally arrived.

This was also the case for a participant who was seen in her home. She also had a cognitive level score below 4.0. It wasn't until the beginning of the last session that the staff told the research assistants, in the participant's presence, that she wasn't allowed to have the $50.00; it had to be held for her by the staff. After further discussion with the staff, it was found that she could have had $10.00 each week, but because of budgeting issues, the staff doled out her money. This participant performed more poorly on the last assessment than would have been expected, possibly because the motivation of the reward had been taken away from her. Future research could take this into account and

give individuals with low cognitive level scores intermediate rewards rather than having them wait until the end of the study. In addition, even though individuals might be motivated to work toward a goal, future research might look at the effect of cognitive level on the delay of gratification necessary to work toward long-term goals and the effect of monetary rewards in providing motivation. This would have implications for possible work experiences.

Finally, it is possible that the retention of the participants is due to the salience to their lives of what was being taught. There were immediate benefits to the individual who was able to participate more fully in the group cooking experience or who was able to prepare something for him/herself. This reflects the results of research in situated cognition indicating that practice in the natural environment, in which skills normally take place, is part of the learning process and is naturally reinforcing, especially when there is personal significance to the skills being learned (Lave, 1988; Sternberg, 1985; Willis & Schaie, 1993).

Although not reported in the results, the experience of and with the SRAs must be addressed. Thirty-two occupational therapy students from freshmen to second year graduate students were directly involved in data collection in the research project as student research associates (SRAs). Because there were so many SRAs involved in the project, all with their unique interpretations of the protocol, even though the protocol was written precisely, the question may be asked if the SRAs confounded the results of the study. SRAs kept journals and those journals revealed that the research protocol was

followed, from the SRAs perspective (as derived from their journal entries), 95% of the time. Although the SRAs recorded inconsistencies with individual participants, these inconsistencies did not lead to inability on the part of the SRAs to follow the protocol.

This was a time-intensive and labor-intensive study in which each participant was seen once by the principal investigator for screening and matching, then five times (approximately one-hour sessions each), during a 4 week period, by a pair of SRAs. In order to avoid researcher bias, all students were blind to the purpose of the study. If the possibility of researcher bias had been ignored, and the principal investigator had the responsibility for the additional five sessions for each participant, the study might have gone on for years. It is the belief of the principal researcher that the study could not have been completed in a timely fashion without the SRAs.

In addition to being objective observers and providing time and labor, the SRAs benefited as well. The SRAs learned about:

1. The occupational therapy process including, but not limited to: entering a system (a group home, usually), coordinating with other professionals, preparing for sessions, assessment, treatment, reassessment, termination, and all the interactions during the sessions. Some SRAs thought of creative ways to motivate participants to keep their weekly schedule sheets; other SRAs established such strong ties that they wanted to maintain a relationship with their participant even after the project ended. This allowed for additional learning about boundaries.

2. Giving a standardized assessment.
3. Research in terms of the importance of following a protocol, keeping a journal to make note of unusual circumstances, and, at the end of the experience, an understanding of what they were doing. (The principal researcher met with students as they ceased involvement to inform them about the project.)
4. People with mental illness. On a personal note, this is probably the most meaningful because the principal researcher started her doctoral work with an idea that she would work on anti-stigma projects for occupational therapy students. Through meetings with SRAs and through journal writings, it is clear that this project was a positive experience for SRAs for all of the above reasons and because they came to appreciate and respect the participants with whom they were working as people first. They saw people in their homes, they saw that these individuals watched the same TV programs they did, enjoyed some of the same foods, and, in short, had lives, hopes, and values, as all people do.

One might think that all individuals going into health professions have positive feelings toward people with whom they will work in the future. This is not the case. There are numerous studies in which both students in health fields and current practitioners have been described as having the same negative attitudes as society toward those with mental illness (Araya, Jadresic, & Wilkinson, 1992; Eker & Arkar, 1991;

Elliott, Hanzlik, & Gliner, 1992; Lyons & Hayes, 1993; Marmer, 1993; Merrill, Camancho, Laux, Thornby & Vallbona, 1991, Minkoff, 1987).). In addition, the research indicates that, in order to reduce stigma, one must involve an individual in a face-to-face interaction with someone with mental illness in a non-institutional or non-treatment environment (Johannsen, 1969, Lamb, 1988; McKeon & Carrick, 1991). This research met those criteria. All SRAs saw some participants in their homes and all worked with participants individually.

The principal researcher received a letter from a student who summarized the experience for her.

> "I wanted to thank you again for the incredible opportunity you offered me for the past year. Having come to this program with little background in mental health, participating in your research project was probably *one of the best learning experiences* I had in this two year master's program. In fact, I think that so many other students would have benefited and enjoyed participating in it as well. It is the hands-on experiences that I learn the most from. The people in the case studies become real, with real feelings, real concerns, and real problems. I was able to develop relationships with people, that prior to this experience, I probably would have feared. Fear attributed to ignorance, rather than fear attributed to knowledge.
>
> "Meeting with the participants in the research was certainly the highlight of my weeks. It offered me outlets to being at Sargent and sitting in classes. I genuinely cared for each person that I worked with, thought of him or her during the week, and was anxious to hear how they were progressing during the four weeks working with them. Most of all, I enjoyed traveling to their homes and learning how similar we really are to one another." (S. Taylor, personal communication, May, 2000)

Involving students in research has implications for educators and researchers of occupational therapy. There is a major focus on evidence-based practice that cannot be ignored (Foto, 1996; Van Leit, 1996) and the new Standards for an Accredited Educational Program for the Occupational Therapist (ACOTE, 1998) require students of occupational therapy to be involved in research. This research project has been a model for faculty and graduate students in the occupational therapy program at Sargent College because the SRAs themselves were engaged in learning by means of the theory of situated cognition (Brown, et. al., 1989; Schell & Schell, 2000). This was a serendipitous outcome, in that the focus of the research was on describing the effect of learning in context for individuals with schizophrenia, and, it also, fortunately, resulted in the learning in context (Greeno, et al., 1993) of the SRAs conducting the study. Activities involving situated cognition has been recommended as the learning model of choice for those entering a professional field (Schell & Schell, 2000). The chair of the occupational therapy department at Sargent College, Boston University, has stated that the contributions made by students, who are also engaged in learning, will continue to be explored (W. Coster, personal communication, March, 2001).

Summary

As patients move from acute care settings to the community, occupational therapists need to teach functional living skills that will support community living. This study demonstrates that people with long-term, non-paranoid schizophrenia and

schizoaffective disorder can learn a functional living skill in several contexts. A cautious interpretation of results indicate that, if the skill is to be used in a particular environment, the skill should be taught in the environment in which the skill will be used. This may be especially true for skills, like cooking, that are context-bound and for individuals who are identified as having limited cognitive ability. Also, people with schizophrenia perform better on an evaluation when it is presented in their homes. Further research is recommended to validate these results with larger sample sizes and to determine how long the results of learning last.

There is evidence from this study to indicate that ability to learn functional living skills and ability to transfer learning can be predicted by assessing the cognitive level of the individual. Because of conflicting results in several meta-analyses (Green, et al., 2000; Knight, 2000), further research is recommended. Although self-report was found to be unreliable by Law (1993), Taylor (1983) reported it to be reliable in a qualitative study. The results of this study were inconclusive due to both uneven reporting of weekly practice and variability among SRAs in creativity of preparing the weekly practice charts. More research is also needed to examine the effect of practice on learning functional living skills, providing more structure and less reliance on self-report. When self-report is indicated, the effect of individualized checklists or other ways of reporting practice should be examined.

Clinical research is complex, and many variables may confound the research. Numerous clinical studies, however, could provide information for a meta-analysis in

which the results from several studies could be compiled to provide validity to the research findings. It is further recommended that partnerships be created between community agencies and researchers based in educational institutions where students could be recruited to supply the people-power to carry out the studies.

Although the results of the hypotheses and questions have been presented with suggestions for further research, some information provided in the discussion would appear to be as important as the original questions asked. First, the SRAs' involvement in the study enabled them to learn about research, the process of occupational therapy, standardized tests, and people with schizophrenia. Since learning in context also appears to be a powerful tool from a pedagogical perspective, continued involvement of occupational therapy students in future research projects is recommended. It is further recommended that scholars of all disciplines consider involving students in future research

Second, the attention paid to the participants appeared to effect the participants' involvement in the study. This attention, coupled with the participants' success in cooking, may have had an effect on the participants' self-efficacy and subsequent performance (Bandura, 1997; Liberman, et al., 1998). It is highly recommended that future research focus on the effect of self-efficacy on learning and achievement

The goal of this research project was to discover whether the occupational therapy practice of teaching functional living skills to people with schizophrenia or schizoaffective disorder who also have cognitive deficits was more effective when the

teaching environment was also the environment in which skills would be used. Although there were mixed results for the hypotheses and questions, information presented and discussed should provide a basis for future research in this area of occupational therapy for people with serious and persistent mental illness.

APPENDIX

KITCHEN TASK ASSESSMENT- MODIFIED

Linda Duncombe, MS, OTR/L, FAOTA

PRE-TEST SET-UP

1. PLACE ON THE COUNTER:
   2 or 3 flavors of pudding mix *(the kind that requires cooking, not instant)
2. PLACE IN THE CABINET:
   A 1 ½ quart saucepan without a heat-resistant handle
   A frying pan
   A clear measuring cup the top of which extends above the 1 cup line
   4 small dishes or 4 clear plastic cups
3. PLACE IN THE DRAWER:
   Wooden spoon
   Rubber scraper
   Potholder
   Box of plastic wrap
4. PLACE IN THE REFRIGERATOR:
   A quart of milk
5. HAVE NEAR THE SINK:
   Hand soap
   Paper towels
   Dish detergent
   Sponge
   Pot scrubber
   Dish towel
   Trash can

INSTRUCTIONS for the KTA-M: Instructions in italics are to be given when the KTA-M is administered in a location other than the individual's kitchen.

You are going to make pudding from start to finish. We need to leave the kitchen as we found it. First, choose a flavor of pudding**. *The equipment you will need is located in these cabinets and this drawer (point).* The milk is in the refrigerator. *The stove works by pushing in the knobs and turning them.* The instructions to make the pudding are on the box. *The only difference is that we will put the pudding in plastic cups, instead of dessert dishes, so that you can take the pudding with you when you are done.* You can begin when you are ready. I will try not to bother you by talking to you when you are cooking. You should ask a question if you need help. I will assist you with suggestions or directions if I feel it is necessary or if it is a safety concern.

* Royal Pudding is recommended because of pudding directions. (Pudding directions should not include wire whisk or recommend serving hot.)

** After a pudding choice has been made, put the additional pudding away.

SCORING GUIDE:

Individuals are scored on the following scale of decreasing independence. If the participant asks a question, the rater tries to respond first with a question (score =4). If the participant needs more help, with either another question or a direct statement, score 3.

5 = Participant requires no assistance. He/she initiates and performs the specific subtask independently.

4 = Participant requires one verbal cue in the form of a question, not a directive statement to complete the specific subtask. (Cue is a reminder in the form of a question. e.g. "Do you have all the ingredients you need?").

3 = Participant requires one verbal cue in the form of a single, complete, directive sentence (e.g. "You need to get the milk from the refrigerator.") or 2 verbal cues in the question format in order to complete the specific subtask.

2 = Participant requires more than one directive verbal cue or a total of 3 or 4 cues in a question format in order to complete the specific subtask of the cooking process.

1 = Participant requires physical assistance in order to complete the specific subtask in the cooking process.

0 = Participant is unable to complete the specific subtask, even with verbal and physical cues.

Component Steps of the Activity

Rating:

____ 1. Wash hands before beginning

_____ 2. Choose a flavor of pudding

_____ 3. Find correct directions on the box

_____ 4. Box opened so that directions can still be read.

_____ 5. Find appropriate pan

_____ 6. Retrieve measuring cup

_____ 7. Retrieve milk from refrigerator

_____ 8. Measure 2 cups of milk correctly

_____ 9. Get spoon (or something appropriate with which to stir)

_____ 10. Open pudding package

_____ 11. Combine pudding mix and milk

_____ 12. Stir until powder is absorbed

_____ 13. Place pan on burner of stove

_____ 14. Place handle of pan so that it does not extend beyond the edge of the stove

_____ 15. Turn on burner directly under pan

_____ 16. Turn burner on to appropriate heat

_____ 17. Retrieve Potholder

_____ 18. Use potholder when holding pan

_____ 19. Stir constantly, not stopping for more than 5 seconds

_____ 20. Determine when full boil is reached

_____ 21. Turn stove off

_____ 22. Place pan on heat-resistant surface

_____ 23. Place cups out

_____ 24. Pour or spoon all pudding into cups

_____ 25. Place equal amounts of pudding in each cup

_____ 26. Place cups in refrigerator

_____ 27. Close milk container

_____ 28. Return milk to refrigerator

_____ 29. Initiate clean up

_____ 30. Place pan and utensils in sink

_____ 31. Wash pan and utensils using soap until clean, rinsing thoroughly

_____ 32. Use pot scrubber on pan if pudding mixture has stuck to bottom of pan

_____ 33. Dry and put away pot and utensils

_____ 34. Wipe off counter, if needed (give 5 if not needed as default score)

_____ 35. Wipe off top of stove, if needed (give 5 if not needed as default score)

_____ 36. Throw away empty pudding box, wrapper, and any other trash

_____ 37. Put potholder away

_____ 38. Remember the instructions given at the beginning

_____ 39. Read and follow directions accurately

_____ 40. Observes proper general safety precautions

COOKING SKILLS RESEARCH PROJECT

Fall, 1999 to Spring, 2000

Dear Friend,

I am an occupational therapist who is interested in learning the best way to teach skills of everyday living. For this study, I will be looking specifically at cooking skills. Therefore, I am looking for people who are interested in improving their ability to prepare their meals. Your participation in this study will require six (6) meetings: one at the beginning will involve filling out a questionnaire. Also during the first meeting, you will be given a small task to perform to see how you work on a task and solve problems. The other meetings will be actual cooking sessions, four may be in the Sargent College Clinic and one in your home, or all five cooking sessions may be in your home. During the time before and after the cooking sessions, you will be asked to fill in a chart about your meal preparation. Each session should take less than one hour of your time. There will be about one week between each session.

There appear to be no risks involved in your participation in the study. A potential benefit is that you may improve in your meal preparation skills. A monetary benefit is that, at the completion of all sessions, you will receive $50.00. The major benefits of the study may be to individuals who need help with meal preparation in order to live independently in the community. My hope is to discover the best way to provide that instruction.

Staff will be asked to provide the following information from your medical record: your diagnosis, when you were first identified with this diagnosis, and what medication you are currently taking.

Confidentiality: Each participant will be assigned a number and all results of interviews, cooking sessions, and kitchen charts will be recorded according to that number. Only I, as principal investigator, will have access

to the code. In reporting the results of this endeavor, the anonymity of the participants will be maintained.

You have the right to have any questions about this research study answered, now or in the future. You may reach me (Linda Duncombe) at Sargent College, Occupational Therapy Department, 353-2728. If you have questions about your participation as a human subject, you may contact David Berndt at 353-4365. Your participation is completely voluntary. You may refuse to answer any questions or to participate in any part of this study at any time without affecting your services in any way. You will receive a copy of this letter.

With thanks,

Linda Duncombe

CONSENT: I have read and understood the description of the study. I have been informed of the risks and benefits and all my questions have been answered to my satisfaction. I have been assured that any future questions will be answered. I understand that I will receive a copy of this form. I understand that I may withdraw from the study at any time. I voluntarily consent to participate in the described research study.

_____ _____

Date Signature

QUESTIONNAIRE

NAME:_____ AGE:_____

ADDRESS:_____

_____ SEX: M____ F_____

PHONE:_____

LIVING SITUATION:

ALONE_____WITH ROOMMATES_____ WITH FAMILY_____

GROUP HOME_____ SUPPORTED HOUSING_____

Are you responsible for your preparing your own meals? YES_____ NO_____

If you answered, "No.", who fixes your meals?

If you answered, "No.", Do you participate in fixing your meals? YES___NO___

If you help, which of the following do you do?

Set the table _____

Prepare a food item that doesn't require cooking, like salad _____

Prepare a food item that requires cooking _____

Clear the table after the meal _____

Wash, dry and/or put away equipment, dishes, and utensils _____

Have you been responsible for preparing your own meals in the past? YES___NO____

If Yes, when did you last prepare a meal for yourself? _____

Did you use the stove? YES_____ NO _____

Did you follow a recipe? YES_____ NO_____

Did you mix several food items together? YES_____ NO_____

Have you ever prepared cooked pudding? YES_____ NO_____

DESCRIBE YOUR EATING HABITS DURING A NORMAL DAY:

How many meals do you eat a day? _____

How many snacks do you eat a day? _____

Do you have any food allergies? If so, what are they?

Is there anything else you'd like me to know about your eating/cooking habits?

DO YOU HAVE THE FOLLOWING ITEMS IN YOUR KITCHEN?

Potholder	Yes_____	No_____
Clear Measuring Cup	Yes_____	No_____
Small saucepan	Yes_____	No_____
Cooking spoon	Yes_____	No_____

GUIDELINES FOR COOKING

1. Wash hands before beginning.
2. Clear a place to work.
3. Get out equipment and ingredients.
4. Follow directions.
5. Use the stove safely.
6. Handle hot items safely.
7. Store all unused food.
8. Wash, dry and put away equipment.
9. Clean work surface.
10. Enjoy what you have prepared!

PROCEDURE FOR RESEARCH ASSOCIATES

PRE-SESSION I;

You will be given the name and phone number of a participant. You will be told if the participant is to receive the first evaluation and three treatment sessions at Sargent College or in his/her home.

Call the participant and arrange to meet at a time that is good for your participant, both of you, and either room 610 or the home schedule. (Although I can give you each a schedule of when room 610 is scheduled for classes, until you schedule it for your participant, I can not guarantee that it has not already been scheduled by someone else. For those of you working in someone's home, I had to promise the Institutional Review Board that we would make sure that all other occupants in a house would be asked if it was okay for us to use their kitchen when we wanted to use it because we are guests in their house. When possible, I will give you the name of a staff member and a number at the house if it is a group home. Also, when possible, I will ask at the initial interview if other residents have any objection to our providing cooking lessons at their home/apartment.) When you are working in someone's home, please be mindful of the fact that you are a guest in someone's home.

Before each session: If your participant is coming to Sargent College, you will need to arrange transportation. I have a contract with the Boston Cab Company. You will need to call them and tell them the name of the participant and when they need to pick up your participant. If this person lives in a group home, you will probably need to tell the staff so that they can help make sure the person is there when the cab comes. The day before your appointment, you should call to confirm. We have also found it is helpful to call the day of the appointment as well as a reminder. The staff person on the day of your appointment may know nothing about the arrangements that have been made. Bottom line: You can't check enough! I would also check to make sure the cab has picked up the person before you go downstairs to wait for them.

When the person arrives at Sargent College, you will need to be out front waiting for them and have the cab coupons to fill out to pay the cab driver. Keep a copy of the receipt. If you know when you want the cab to return you can make the arrangements at this time, or you can call Boston Cab when you are through (or close to being through). If you wait until your session is completed, you will have to wait until the cab comes. Make sure you and your participant are in the downstairs lobby waiting for the cab. If no one is there when they arrive, they will leave. This time you have to fill out the cab coupon before the cab driver leaves. Write in 15% by the tip and ask them to fill it out at the other end. You can let them know that you know what it cost for the person to come to Sargent. At any rate, when the bill comes in, I will compare the two fares and if there is a big discrepancy, I will challenge it.

Make sure you put the cab booklet back where it belongs so that other students will be able to find it when they need it.

SESSION I

Equipment and supplies needed:

Pudding, several flavors: The cabinet in room 610 should be well-stocked.

Milk, one quart, if you are going to someone's house. For those working in room 610, I will try to keep milk in the refrigerator.

Additional equipment may be needed at someone's home, based on the initial interview. If this is the case, I will let you know and you will need to take it with you.

KTA-M assessment form (and pen or pencil)

Laminated cooking guidelines

Weekly schedule

Tape

Protocol:

Ask them for the weekly schedule they were filling out. Make sure their name is on it and that it is dated.

Give the KTA-M.

Go over the Cooking Guidelines:

Sit down with the participant and go over each item, explaining how it relates to the pudding task you just did. If they did something right, like remembering to wash their hands, praise them for it. If they forgot something, like putting away unused ingredients, ask them if they remember forgetting that and spend a little time talking about why this is important.

Tell them that the cooking lessons are going to be organized around these guidelines and you would like the participant to put the guidelines in their kitchen to refer to during the week. If you are in their kitchen, help them find an appropriate place to hang them and use your tape to hang them up. If they are in room 610, ask them to take the guidelines home and hang them in a good place.

While you are still looking at the guidelines, you can explain that "Next week we will be working on these guidelines," and point to or read #1, #2, #3, #7, #8, #9, #10. Tell them that you are going to make a sandwich with two ingredients. Ask them what kind of sandwich they like. Try to limit them to two ingredients. If they want mayonnaise or mustard as one of the ingredients, that is okay. I will provide all the ingredients you will need, but if you are working in someone's home and they want mayonnaise or mustard, check to see if it is a staple ingredient in their kitchen so you don't have to take it with you. You will need to let me know immediately what ingredients you need for the sandwich and when you are meeting again so that I can make sure you have what you need.

Weekly Schedule: Before you leave, give the person a copy of another weekly schedule. Ask them to check when they have fixed a meal, or participated in preparing a meal, and if they have used the stove. Tell them you will collect it the following week. If you are working in their home, ask them where a good place would be to put the schedule so they don't forget to fill it out. Give them a pen clipped to the schedule.

Immediately after leaving: Write in your log book. Write the date and time that you met with the participant, how long you spent with him/her. Record any deviations from the protocol and be very specific. These deviations could have to do with procedure or time, e.g. you met 8 days, instead of 7 days after the last session. Explain why this

happened. Finally, add any information that you think might be significant: the emotional or physical state of the participant, how you were feeling, comments the participant made about the cooking sessions, you, or life in general. Begin to use your observation skills and write down everything you can think of. It is possible that the tone in the group home might be a little tense or excited because of an incident that happened before you arrived. All of this information may be helpful in analyzing the data after the study is completed. This is called post-hoc analysis.

Before session II

During the week between sessions I and II, make sure that you have confirmed the time and location of your next visit. Call you participant and/or the staff member involved to make sure everything is accurately scheduled. Make sure you have confirmed with me the food you need and when and how you will get it. Inform Mariko of your participant's score in the KTA-M and give Mariko the form you used. Make sure your form includes the participant's name and date.

SESSION II

Supplies needed:

Cooking Guidelines (an extra laminated copy)
Weekly schedule
Ingredients to make a sandwich with two ingredients.

Begin this session by greeting your participant and spending a few minutes asking how his/her week went. Collect the weekly schedule and make sure the participant's name and date are on it. Make sure you understand how he/she filled it out.

Sit down and look at the "Cooking Guidelines" with the participant. [*If you are in the participant's home, find the guidelines that you have helped him/her hang in the kitchen. If the guidelines can not be located, use the ones you have brought. Again, help the person hang the guidelines in a place where he/she can see them to refer to during the cooking process. If you are in Sargent College, use the guidelines you have with you and ask the participant where he/she hung the guidelines you gave him/her last session.*] Remind the person that today you will be making a sandwich and that you are going to use guidelines #1,2,3,7,8,9,10. Go over each of these guidelines, asking for input from the participant when appropriate. For example, for "Clear the work surface." Ask where he/she plans to make the sandwich and have him/her think about what might have to be moved. In essence, you will talk out the sandwich making according to the guidelines before making the sandwich.

Next, make the sandwich. Ask the participant if he/she has made a sandwich before. Whether the answer is yes or no, ask the participant if he/she would like some help with the steps involved in making a sandwich, or would he/she like to do it on his/her own. If the participant is sure he/she can make a sandwich and feels it is too easy, stress that the reason you are making the sandwich is to make the cooking guidelines "automatic", so the participant doesn't have to think about the steps one goes through in the cooking of anything. Remind the participant to follow the guidelines. If your participant uses the guidelines, praise him/her. If he/she forgets to use the guidelines, ask her/him to look at the guidelines and read the next step. [*The participants should be able to make the sandwich without help, so don't feel that you need to tell them everything to do. Let them go through the steps of making the sandwich. Only intervene if they are doing something that doesn't fit for the guidelines or is unsafe, like using a sharp knife and leaving it where they might cut themselves.]*

After the sandwich is completed, go over the cooking guidelines. Again, if the participant remembered a step, praise him/her. If he/she needed a reminder, talk about it. Ask the participant if he/she remembers what he/she forgot and what he/she would do next time. Of course, the participant may eat the sandwich when the session is over. If the participant wants to save the sandwich to eat later, this is your opportunity to talk about safe storage of food. You should be able to find something in his/her home in which to wrap the sandwich. If you are in room 610, there will be foil and plastic wrap available.

Before you leave the participant, give him/her another weekly schedule to fill out. See instructions in Session I. Tell your participant that, at the next session, you will be making a kind of noodle soup. Tell him/her when you will meet again. Thank him/her for his/her time.

Immediately after leaving, write in your journal. See instructions above.

Before session III

During the week between sessions II and III, make sure that you have confirmed the time and location of your next visit. Call you participant and/or the staff member involved to make sure everything is accurately scheduled. Make sure you have confirmed with me the food you need and when and how you will get it.

SESSION III

Supplies needed:

Ramen soup (take an extra package in case one gets ruined)
If in room 610, all supplies should be there.
If in someone's home, take the extra pan, the potholders, a measuring cup, a spoon, dish detergent, a potscrubber, a sponge, and a dish towel.
Extra set of laminated cooking guidelines.
A plastic container for soup storage.

Begin this session by greeting your participant and spending a few minutes asking how his/her week went. Collect the weekly schedule and make sure the participant's name and date are on it. Make sure you understand how he/she filled it out.

Sit down and look at the "Cooking Guidelines" with the participant. *[See information about finding the cooking guidelines above.]*

Remind the person that today you will be making noodle soup and that you are going to use all the cooking guidelines. Go over each of these guidelines, asking for input from the participant when appropriate. This time you can use examples from the previous week as reminders of what each guideline means. In essence, you will talk out the making of the soup before beginning.

Next, make the soup. Ask the participant if he/she has made this kind of soup before. Whether the answer is yes or no, ask the participant if he/she would like some help with the steps involved in making this soup, or would he/she like to do it on his/her own with some guidance from you. Again, stress that the reason you are making the soup is to make the cooking guidelines "automatic", so the participant doesn't have to think about the steps one goes through in the cooking of anything. Remind the participant to follow the guidelines. If your participant uses the guidelines, praise him/her. If he/she forgets to use the guidelines, ask her/him to look at the guidelines and read the next step. *[The participants will probably not be able to make the soup without help, so make sure you are very attentive. Intervene whenever they are doing something that doesn't fit for the guidelines or is unsafe.]*

After the soup is completed, go over the cooking guidelines. (If the participant wants to eat the soup while it is hot, that is okay. You can talk while he/she is eating or wait until he/she is finished. There will be plastic bowls and spoons in room 610. You will have to find something in the participant's home for him/her to use.) Again, if the participant remembered a step, praise him/her. If he/she needed a reminder, talk about it. Ask the participant if he/she remembers what he/she forgot and what he/she would do next time. If the participant wants to save the some or all of the soup to eat later, this is your opportunity to talk about safe storage of food. You should be able to find something in his/her home in which to store the soup, if not, use the plastic container you took with you. If you are in room 610, there will be plastic containers available.

Before you leave the participant, give him/her another weekly schedule to fill out. See instructions in Session I. Tell your participant that, at the next two sessions, you will be making cooked pudding again. Explain also that you will be seeing him/her two days in a row and that will be the end of the study. Remind the participant that at the end of the study he/she will be paid $50.00. Make arrangements for both of these meetings before you leave this session. If you are meeting in a participant's home, make arrangements to meet there two days in a row. If you are meeting in room 610, make arrangements to meet in room 610 one week from today's session and arrange to meet the participant in his/her home the next day. This may take some calling of staff on your part to make sure that this is okay. Thank him/her for his/her time.

Immediately after leaving, write in your journal. See instructions above.

BEFORE SESSION IV

During the week between sessions III and IV, make sure that you have confirmed the time and location of your next visit. Call you participant and/or the staff member involved to make sure everything is accurately scheduled. Make sure you have confirmed with me the food you need and when and how you will get it. You should also confirm the time for Session V during this week, since both sessions will happen within a day of each other.

Equipment and supplies needed for each session (IV and V):

Pudding, several flavors: The cabinet in room 610 should be well-stocked.

Milk, one quart, if you are going to someone's house. For those working in room 610, I will try to keep milk in the refrigerator.

Additional equipment may be needed at someone's home, based on your previous visits, you will know what you need to take.

2 copies of the KTA-M assessment form (and pen or pencil)

$50.00 for session V

Form for the participant to sign saying that they received the $50.00.

SESSION IV

Begin session IV by greeting your participant and spending a few minutes asking how his/her week went. Collect the weekly schedule and make sure the participant's name and date are on it. Make sure you understand how he/she filled it out.

Protocol

Give the KTA-M.

Before you leave, remind your participant that you will meet again the next day and confirm that you will be meeting with the person in his/her home. Remind him that tomorrow will be your last session. (Preparing for ending therapeutic relationships is very important.) Thank him/her for his/her time.

Immediately after leaving, write in your journal. See instructions above.

PRE-SESSION V

If possible confirm with someone at the participant's home that you are coming on that day. Call the morning of your visit because staff changes frequently.

SESSION V

Protocol

Give the KTA-M.

When you have completed everything, give the participant $50.00 and ask the participant to sign the paper stating that he/she received the money. You may want to let a staff member know that you have given the participant that much money.

Immediately after leaving, write in your journal. See instructions above.

Give all of your notes from all sessions and scores on the KTA-M to Mariko. Make sure your participant's name is on the KTA-M and that it is dated. If you are seeing more than one participant, you may keep your log going until you have completed your participation in the study.

THANK YOU; THANK YOU; THANK YOU; THANK YOU; THANK YOU;
A MILLION AND ONE THANK YOUs

Research Associate Contract

I ,_____, would like to participate in the cooking research project during the 1999-2000 academic year.

I understand that it is critical that I am responsible to the project, i.e., that I carry out the assessment and treatment protocols exactly as they are stated.

I agree to document any deviation from the established protocol.

I agree to meet the target time lines for meeting with my participants.* If an emergency should arise, I understand that I must communicate it with appropriate staff, Linda, my partner, and the participant.

I understand that anything that I learn about any of the participants is confidential. I will only share it with appropriate staff people who might work with the participants or with Linda.

_____ _____

Signature Date

* You and a partner will be given a participant's name and phone number. You will need to contact your participant and arrange a time to meet with that person. Make sure you select a time that is good for you for the next 4 weeks, because you will meet with that person once weekly. You fifth and final session should be one day after the 4th meeting.

	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
BREAKFAST DID YOU EAT AT HOME ?														
IF YES : DID YOU PREPARE YOUR FOOD ?														
DID YOU USE THE STOVE ?														
LUNCH DID YOU EAT AT HOME ?														
IF YES : DID YOU PREPARE YOUR FOOD ?														
DID YOU USE THE STOVE ?														
DINNER DID YOU EAT AT HOME ?														
IF YES : DID YOU PREPARE YOUR FOOD ?														
DID YOU USE THE STOVE ?														
SNACKS DID YOU EAT AT HOME ?														
IF YES : DID YOU PREPARE YOUR FOOD ?														
DID YOU USE THE STOVE ?														
COMMENTS (USE BACK IF NEEDED)														

Participant Payment Receipt

Name of Participant:_____

Social Security Number: _____

I have received $50.00 for my participation in the cooking skills study organized by Linda Duncombe at Boston University.

_____ _____

Name (signature) **Date**

_____ _____

Research Assistant Research Assistant

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