

## Student Masters Projects and Presentations 2008



### Participant's Perceptions of the Usefulness of CarFit

Using a quasi-experimental research design, forty-four seniors from three different settings participated in a CarFit event and were interviewed about the experience. Data was analyzed to describe driving histories of participants and make inferences about perceptions of the program's usefulness. Results show the average age of participants as 76.69 years old with a range of 55-86 years. Participants were from a retirement community, city area, and rural area. Using a Likert scale with 1 being poor/strongly disagree and 5 being excellent/strongly agree, the mean rating of the CarFit experience was 4.61 and rating of the value/usefulness was 4.58. Participants indicated they would recommend CarFit to a friend or family member. It was also found that 24% of participants drove a Buick and the majority of cars were made in 2000 or later. The majority of participants traveled within 50 miles of their homes, regardless of age or setting. As a result of CarFit, twenty-seven participants indicated that they thought more about their driving after attending CarFit. Further comparison of the three groups needs additional analysis. Results suggest that most participants perceive CarFit as a beneficial and useful experience because they learned helpful information related to safe driving.

*Courtney Cosentino, Ilesha Hernandez, and Kimberly Hocking are all professional master's degree students who completed this project under the direction of Dr. Anne Dickerson and Dr. Jane Painter.*

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### Handwriting Without Tears: Handwriting Readiness Pre – K Intervention

The purpose of the study was to determine whether Pre-Kindergarten (Pre-K) children who received Handwriting Without Tears® (HWT) instruction would improve more in writing readiness skills than Pre – K children who did not receive HWT intervention. Effectiveness of HWT program was measured using the Peabody Developmental Motor Scales, the Learning Accomplishment Profile, and the HWT Check Readiness. Pre-testing was conducted to identify the experimental group, which consisted of children who tested below average in fine motor development. The control group consisted of a comparable number of students that tested average or above on pre-test assessments. The experimental group participated in a total of 30 HWT sessions consisting of multisensory activities designed to develop pre-writing skills. The control group participated in regular Head Start programming

only. Statistical comparisons between pre test and post test performances revealed that all children in the experimental group demonstrated significant improvements in fine motor skills and improved to become comparable to the control group in multiple areas. The conclusion is that HWT would be a useful adjunct to Head Start programming to improve pre-writing readiness skills of low performing students.

*Kim Brown, Brian Hummel, and Megan Terrio are all professional master's degree students who completed this study under the direction of Dr. Carol Lust.*

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### **Comparison of the AAA Brake Reaction Timer and the RT-2S Brake Reaction Timer**

The purpose of the study was to examine the correlation in brake reaction times by age group and gender between the RT-2S and American Automobile Association (AAA) blue box, which has established validity. A convenience sample was used for the 224 participants from Eastern North Carolina. Subjects were randomly assigned to counterbalance groups and conducted both brake reaction measurements in order to establish a relationship between the interventions. Results were analyzed against the establish norms for the AAA blue box. Results indicated that brake reaction times are faster for males than females and as age increases, brake reaction times decrease, similar to past studies. The study did find that the RT-2S is a valid instrument for measuring simple brake reaction time. Although the RT-2S brake reaction times are slower than the AAA norms, it is likely that the RT-2S may be more accurate.

*Daryl Bourgeois is a professional master's student completing this study under the direction of Dr. Anne Dickerson.*

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### **Environmental Impact on Psychophysiological Responses in an Individual with Profound Mental Retardation**

The purpose of the study was to compare the psychophysiological responses of an individual with profound mental retardation in three different environments. It was hypothesized that participation in the Snoezelen® room would reveal a decreased amount of stress, as evidenced by psychophysiological responses, compared to when the participant was in the living room or bedroom environments. Data was collected from a single subject, diagnosed with profound MR, within in his bedroom, the living room and the Snoezelen® room. The measures included electrodermal activity, peripheral skin temperature, heart rate, and electromyographical activity and collected utilizing a portable, wireless Nexus-10 recording unit. To determine the results, data was analyzed graphically by averaging the mean responses across each environmental condition. The living room environment was the most physiologically arousing environment and the bedroom was the least

stimulating while the Snoezelen® provided a more moderate level of arousal. Data suggests that the Snoezelen® room facilitates a more favorable level of environmental stimulation by providing enough stimulation to remain alert during daily occupations without feeling overwhelmed or becoming distracted.

*Katie Ginader and Emily Parker are both professional master's degree students who completed this study under the direction of Dr. Beth Velde.*

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### **Motion Analysis of Upper Extremity Movement Smoothness**

The purpose of the study was to examine the relationship between kinematic measurements of forearm and wrist movement smoothness and common upper extremity (UE) assessments used in occupational therapy. A case series design of 10 adults with UE hemiparesis secondary to brain injury or cerebral vascular accident was used. Qualisys motion analysis cameras were used to measure

movement smoothness as determined by changes in acceleration of forearm rotation and wrist movements. Measurements were taken during reaching trials with common objects using different grasping patterns, rates, and weights. Participants were evaluated with common assessments of coordination, muscle tone, and UE motor function. Participants demonstrated significantly different movement smoothness in their involved limb across all reaching trials, particularly between spherical and cylindrical grasp patterns. Similarly, differences in smoothness were found between slow and fast reaching rates. With respect to therapy outcomes, the strongest correlations were between movement smoothness and the Jebsen Hand Function Test, an UE motor function assessment. Movement smoothness shows good promise to differentiating subtle differences related to grasp patterns, reaching speed, and object characteristics.

*Julie Burke, Corinne Burns, Kelly Grayburn, and Amanda Todd are all professional master's degree students who completed this research under the direction of Dr. Tim Reistetter.*

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### **The Validation of the Computerized Motor Free Visual Perception Training Program as an Accepted Occupational Therapy Treatment Intervention**

This study was designed to evaluate the effectiveness of the Computer-Assisted Visual Perception Training (CAVPT) software as a means to improve visual perception skills in older adults. The concept was that if these skills could be improved, it may lead to increased self-esteem, the ability to engage in meaningful tasks, increased

safety in activities such as driving, and decreased fall risk. Twenty-three participants were randomly

assigned to one of three groups: computer intervention, paper intervention, or control. The intervention groups completed eight training sessions using the CAVPT software or paper copies derived from the software. All participants were pre-tested and post-tested using the Motor-Free Visual Perception Test – 3rd Edition (MVPT-3). Participants completing the computer intervention demonstrated a slightly greater change than participants completing the paper-based intervention, but neither group exhibited a significant improvement over the control group. The results show no significant impact of computer-based or paper-based intervention on visual perception skills as measured by the MVPT-3. Although the results did not reflect a significant improvement of skills, participant feedback provided valuable insights on ways to improve the CAVPT software to achieve better outcomes.

*Erin Cunningham, Victoria Hatch, and Teresa Kreis are professional master students under the direction of Dr. Leonard Trujillo.*

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**Effectiveness of Tai Chi Exercise and Fall Prevention Education among Seniors Living in a Continual Care Facility**

The purpose of this study is to determine the effect of Tai Chi exercise and fall prevention education on the risk of falling and fear of falling. Using a quantitative correlational and descriptive design, pre-tests were compared to mid-tests and post-tests. There were 32 participants (5 males and 24 females) that resided at Cypress Glenn United Methodist Retirement Community, in Greenville, NC. The age range was from 71-96 years. The assessments that were used for this study include the Survey of Activities and Fear of Falling in the Elderly, Timed Get Up and Go, Berg Balance Test, Geriatric Depression Scale, and Short Blessed Test. Assessments were administered individually to all participants 3 times: prior to treatment, following 8 weeks of Tai Chi exercise classes, and following an additional 8 weeks of Tai Chi exercise classes. A one hour fall prevention education class was conducted at the start of the study. Tai Chi exercise classes lasted 30 minutes, were conducted in a group setting twice a week, and consisted of a warm-up, Tai Chi movements, and a cool-down. Results from the pilot study suggested that Tai Chi does improve mental health, posture, and balance with the participants reporting increases in endurance, strength, balance, and range of motion.

*Joni Long and Cherie Newton are both professional master’s degree students who completed this project under the direction of Dr. Jane Painter.*

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### **Entrepreneurs: The Meaning of Community Built Health Clinics in Eastern North Carolina**

There is limited research on the meaning of community built health clinics and the characteristics that make them distinct from other health care facilities. This phenomenological research study explored the meaning of community health clinics to those involved in their development and to individuals who rely on these clinics for their health care needs. Data was collected via semi-structured interviews with six informants involved with the Tillery People's Clinic. Interviews were audiotaped and transcribed verbatim. These tapes along with field notes were analyzed for categories and themes using NVivo qualitative analysis software. The analysis yielded 3 themes: "The community clinic emerges from an unique developmental context," "Many barriers exist to getting well and staying well," and "The clinic has our

community at heart." The results of this study echoed themes found in the literature about the barriers to receiving quality health care for the rural poor and the increased strength of an organization when community members are involved in the development. As lifespan increases, individuals spend more time living in their community. These provide increased opportunities for occupational therapists to help community-dwelling individuals to identify and maintain their valued occupations including habits related to health and wellness.

*Rachel Hill is a professional master's student completing this study under the direction of Dr. Beth Velde.*

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### **The Examination of Upper Extremity Movement Smoothness following Stroke post Intervention with Interactive Metronome®**

The purpose of this study was to determine the effects of a specific intervention, the Interactive Metronome®, on selected aspects of motor skills and movement smoothness in a group of adults who are identified as being more than 6 months post-stroke. Each participant was asked to complete two standardized upper extremity evaluations which will measure the smoothness and timing of movement in both upper extremities. These two evaluations, along with the long-form assessment included within the Interactive

Metronome®, will provide a baseline measurement of upper extremity ability. They then will be asked to participate in one of two groups. Participants in the experimental group received the Interactive Metronome® as a treatment modality, participating in a predetermined protocol incorporating exercises for both the upper and lower extremities. The control group was give a self-range of motion home exercise program to complete twice daily. It is anticipated that those completing the Interactive Metronome protocols will show marked improvement in their motor skills and movement smoothness. The improvements are believed to transfer towards improving the participants' ADL and IADL activities.

*Kelley Gleason is a professional master's degree student who completed this project under the direction of Dr. Leonard Trujillo*