THE SYSTEM OF LEAST PROMPTS TO PROMOTE INDEPENDENCE IN ACTIVITIES OF DAILY LIVING FOR OLDER ADULTS

by

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Submitted in Partial Fulfillment of the Requirements

for the Degree of

Master of Science

in the

Applied Behavior Analysis

Program

YOUNGSTOWN STATE UNIVERSITY

May, 2011

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Abstract

As we age, certain predictable but avoidable changes occur. One change being that older adults come to rely on others for more and more of their daily care. Maintaining functional independence, to the extent that it's desirable, increases life satisfaction. The goal of this study was to increase independent dressing behavior for six residents diagnosed with cognitive impairments. A multiple baseline design was used to evaluate the effects of a brief training procedure for nursing staff in an assisted living facility to implement the System of Least Prompts (SLP) procedure. Generalization of independent behavior to an untargeted ADL was also assessed. A significant increase in independent dressing behavior and generalization of independent behavior to an untrained ADL was evident. Notably, resident dressing time did not increase following implementation of the SLP procedure. These results provide evidence of the effectiveness and efficiency of SLP in increasing independent behavior for older adults with cognitive impairments.

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The System of Least Prompts to Promote Independence in Activities of Daily Living for Older Adults

Previous research suggests that 50 percent of older adults in nursing homes have been diagnosed with some form of dementia and 80 percent of those individuals need assistance in performing everyday activities (Engelman, Mathews & Altus, 2002). Activities of daily living (ADLs) refer to self-care tasks performed in everyday life such as dressing, grooming, bathing, toileting, transferring, and eating. Andersen, Wittrup-Jensen, Lolk, Andersen, and Kragh-Sorensen (2004) provided evidence that relative independence, regardless of the severity of dementia, was the main factor regarding quality of life in older adults. In addition, Andersen et al. (2004) stated that performance in ADLs was the primary indicator in determining the progression of dementia. Thus, decreased independence and quality of life were the primary side effects of difficulty performing ADLs (Andersen et al., 2004). Due to the prevalence of dementia and the importance of maintaining independence in ADLs for older adults with cognitive impairments, further research is needed to provide empirically-based behavioral interventions that could be implemented in long-term care facilities (Buchanan, 2006).

Alzheimer's disease and other related dementias result in the progressive deterioration of skills necessary to complete ADLs, resulting in greater dependence on caregivers for assistance. Identifiable characteristics associated with dementia include the disintegration of cognitive functions such as memory, motor skills, and language, as well as changes in personality, judgment, and behavior (Chung, 2006). Hence, dementia itself can be defined as increased, progressive difficulty performing ADLs, and can

therefore be quantified in severity by the amount or level of difficulty. Andersen et al. (2004) stated that the relationship between level of dementia and independence is positively linked. This relationship can be artificially accelerated by an increased reliance on professional care, which is alluded to be unnecessary in some cases (Baltes, Neumann, & Zank, 1994).

By conducting a series of observational studies, Margret Baltes and colleagues built on theories and developed the terms *dependency-support* and *independence-ignore scripts* (Baltes et al., 1994). The scripts were developed from identifying interaction patterns among older adults and their caregivers. The interaction patterns observed were robust and consistent across their studies. These scripts signify that dependent behavior is most likely to result in social contact and attention, thus maintaining and increasing the future frequency of those dependent behaviors. While dependent behaviors are strengthened with social reinforcement, independent behaviors are ignored, consequently extinguishing those behaviors (Baltes & Wahl, 1996). As a result, the behavioral paradigm cultivated by elderly patients with their caregivers often dictates their level of reliance and independence (Baltes et al., 1994). The underlying assumption is that elderly patients seek attention and companionship from caregivers by asking for help when it is unnecessary, therefore accelerating their rate of dependence performing ADLs. Further, if a caregiver or staff member provides complete assistance when unnecessary, dependence becomes exaggerated. As older adults enlist more help completing ADLs, they become less practiced completing those ADLs on their own. Due to the progressive nature of dementias, lack of practice or performance of a skill eventually results in complete deterioration of that capability.

Furthermore, severe inactivity, to the rate of 65% of residents' time spent doing "little to nothing", is a common characteristic in nursing home settings (Ice, 2002). It has been hypothesized by Kuhn, Fulton, and Edelman (2004) that dementia patients are at increased risk for stagnation because they lack the motivation to begin or sustain activities. Substantiating this hypothesis, Burgio and colleagues (1994) conducted an observation of 11 nursing home residents diagnosed with dementia. They found that no activity was present in 87% of observations. Stagnation from lack of ambulation has been shown to decrease the well-being and self-esteem of dementia patients (Kuhn et al., 2004). Since residents are not engaging in independent activities, the capability to perform these activities will not be maintained; as a result, independence is progressively lost, when oftentimes it could be preserved.

Public Policy Implications

Government intervention in the form of the Omnibus Budget Reconciliation Act (OBRA), also known as the Nursing Home Reform Act, was introduced in 1987. The primary focus of OBRA was to sternly limit the widespread use of medications as a first resort to control dementia patients, especially those paid for by Medicaid and Medicare (Buchanan, 2006). A shift towards the use of least intrusive empirically-based behavioral interventions to resolve issues encountered in institutional settings were desired (Buchanan, 2006). OBRA outlined a wide range of goals and provisions such as preventing the deterioration in the ability to perform ADLs. Behavioral interventions are advantageous because they promote independence, increase access to reinforcers and do not have potentially severe adverse side effects as compared to psychotropic medications (Buchanan, 2006). While the act was successful in limiting the use of medications, it had

virtually no provisions for controlling the use of behavioral interventions with these patients, since empirical literature supporting these interventions was sparse. More specifically, OBRA did not specify what interventions were successful, how to implement the interventions, or for how long each interventions should be implemented and monitored (Buchanan, 2006).

A study conducted by the Department of Health and Human Services found that the most common forms of behavioral interventions in nursing homes were isolating a resident, redirecting residents to perform another task, or addressing the concerns of the resident following an episode of escalation (Psychotropic Drug Use, 2001). These interventions tend to be confrontational in nature and are often implemented after the event, making them less effective (Buchanan, 2006).

Therefore, a shift towards antecedent behavioral interventions that occur prior to the problem behavior should be more advantageous. Antecedent interventions modify the individual's environment prior to the problem occurring, providing an environment that promotes success rather than failure and reduces interactions in which confrontations occur.

Buchanan (2006) stated that providing staff training, consisting of pre-emptive behavioral intervention techniques, would be necessary to integrate empirically-based antecedent interventions into long-term care settings. Hence, this recommendation can be applied to older adults and ADLs. To maximize quality of life in old age, emphasis should be placed on adopting antecedent behavioral interventions that foster maintenance of ADL-related skills, and ultimately independence.

System of Least Prompts

The System of Least Prompts (SLP) procedure is an antecedent intervention in which levels of prompting, response intervals, and consequences are systematically selected (Grow, Carr, Gunby, Charania, & Gonsalves, 2009). The SLP procedure has demonstrated to be effective in skill acquisition of dressing skills for older adults diagnosed with dementia (Engelman et al., 2002; Engelman, Altus, Mosier, & Mathews, 2003), as well as ADL and Instrumental Activities of Daily Living (IADLs) behavior chains for children, adolescents, and adults with mild to severe intellectual and developmental disabilities (Horner & Keilitz, 1975; Jones & Collin, 1997; Manley, Collins, Stenhoff, & Kleinert, 2008; Taber-Doughty, 1995). This prompting strategy allows for independent responses by beginning with the presentation of a directive. In the future, this directive may serve as a discriminative stimulus (S^d) for the target response due to the individual's history of reinforcement associated with that stimulus. For instance, if a resident emits a target response following the presentation of the directive or S^d, the individual will be provided with positive reinforcement, oftentimes in the form of descriptive verbal praise, for emitting the response. This, in turn, is expected to increase the future frequency of the target response following the presentation of the S^d, due to the reinforcing consequence. The completion of a step in the behavior chain may also serve as the S^d for the next step in the sequence. During the SLP procedure, if an incorrect response or no response is emitted during the response interval, a verbal prompt is provided. If an incorrect response occurs again, more intrusive prompts such as gestural, model, and/or physical guidance are gradually provided. Once correct responding begins to occur independently, prompts are systematically faded with the goal

of the target behavior coming under control of the discriminative stimulus alone. Differential reinforcement is most commonly provided as a consequence of responding, with correct responses resulting in more highly preferred reinforcers and incorrect responses resulting in less preferred reinforcers (Grow et al., 2009).

Staff Training

At times, nursing staff may provide more intrusive assistance than needed to assist these individuals in completing ADLs. Educating direct care staff on antecedent behavioral interventions such as SLP to increase independence in older adults with cognitive impairments may alter the reinforcement contingencies that promote dependent behavior in these individuals. In other words, staff should provide reinforcement for independent behavior, rather than dependent behavior.

Baltes et al. (1994) theorized that to effect change in an "over-care" situation, in which dependence is reinforced and independence is ignored, a training program for caregivers, in conjunction with an observational study, would be necessary to show that independence in elderly patients could be significantly improved when caretakers utilized prompting effectively. Thus, Baltes et al. (1994) designed a lengthy training program for caregivers. The first stage was comprised of information regarding basic communication skills, aging and plasticity of behaviors in elderly patients, and basic behavioral principles in the management of desired and undesired behaviors. The second stage of the program consisted of transfer of training knowledge from workers to residents. Workers developed behavioral intervention plans designed to increase independence in activities of daily living. For participating residents, behaviors such as brushing teeth, dressing, toileting, and eating were considered. The interactions between caregivers and residents

were observed for 6 weeks, accompanied with a pre and post test assessment of the patient's degree of independence.

The results indicated a significant improvement in residents' rate of independence completing ADLs, and a decrease in the tendency for caregivers to provide unnecessary care for residents. Additionally, an increased understanding of the malleability of resident's behavior was repeatedly stated by the caregivers, lessening the assumption that residents required intrusive care for daily tasks. Baltes et al. (1994) were successful in providing evidence that education of nursing home staff can have a direct effect on improving the independence of residents and reducing the overall level of care required by residents.

Unfortunately, most of the research regarding staff training to promote quality care in older adults, such as those conducted by Baltes et al. (1994) and Teri et al. (2009), involve lengthy trainings and require a substantial amount of time and money to execute (Engelman et al., 2002). During these trainings it is also important to understand concerns that staff may have that make them resistant to participate in training and implement the procedures. Addressing efficacy of training and staff concerns may serve to improve training programs in the future.

To address these and other concerns, Teri et al. (2009) focused on the development and implementation of a training program for unlicensed assistive personnel (UAPs), to improve care for individuals suffering from dementia. A lengthy two day training program was held with each trainer to inform them of the procedures necessary to train UAPs. Training of the UAPs was conducted at each site and consisted of two, four hour workshops, and four, one hour individualized sessions focusing on specific

topics related to dementia. Further individualized sessions for those UAPs who appeared to be reserved or reticent to participate in the group classes were also conducted. Additional training for supervisory and administrative staff of the care facilities, consisting of a forty-five minute introduction of the training program and its potential benefits to staff members were also incorporated.

A questionnaire was administered to staff workers as well as regular telephone conference discussions with staff to gain their opinion regarding the effectiveness of the program. It was noted that many of the UAPs were reluctant to participate in the program, feeling the additional instruction would ultimately result in more work for them. Significant effort was placed on convincing the UAP staff that the training would be beneficial for them and would diminish their need to perform some duties for the residents. The key staff issues the researchers encountered were 1) time pressure, 2) hesitation to try new strategies, 3) conflicts with prior training and experiences, 4) preconceived or unhelpful attitudes about the ‘‘cause’’ of resident behaviors, and 5) a lack of awareness of the impact staff behavior may have on residents. Teri et al. (2009) suggested informing staff of the importance of dealing with resident problems before they occur and intensify, and making staff members understand that the skills during training are supported by their supervisors and administrators. Additionally, guiding the staff member through their actions and having them explain what they did specifically that led to the behavior change in residents will promote awareness of the reciprocity of their interactions with residents (Teri et al., 2009).

Staff concerns need to be addressed while attempting to promote quality care in institutional facilities since staff are ultimately the ones who provide hands-on care and

who have the most contact with residents. Gaining cooperation of direct-care staff is essential while attempting to educate them on techniques to facilitate independence and quality care in institutional facilities, in order to increase the likelihood that they will transfer the information they received during training on the job. To promote transfer of training, work system factors such as an open communication climate, a change resistance climate, organizational commitment, opportunity to use training, and work flow need to be considered (Lim & Morris, 2006). In other words, reducing staff resistance to training and implementation of interventions, increasing supervisory support, and giving staff many opportunities to utilize what they learned in training is advantageous in promoting transfer of training on the job. Trainings that are effective in promoting quality of care are of great importance since so many individuals residing in these long-term care facilities require assistance in completing ADLs. For instance, dressing is a complex ADL that most residents require assistance in completing.

Dressing Independence

Roger et al. (2000) indicated that 91% of nursing home residents with Alzheimer's disease required assistance by someone else in order to complete their dressing routine. Rogers et al. (1999) observed 84 nursing home residents and found that less than ten seconds of the dressing process was being devoted to verbal and non-verbal directive assists. Interactions between staff and residents such as the delivery of prompts and praise, as well as other environmental factors present during the dressing process, need to be considered to determine ways to make the dressing process as therapeutic as possible.

Thus, Cohen-Mansfield et al. (2006) elaborated on the findings of Rogers et al. (1999) by exploring communication between staff and residents, level of resident involvement, and environmental factors such as location and equipment during the dressing process. Cohen-Mansfield et al. (2006) found that it typically took staff 4-9 minutes to dress patients during observations. The researchers noted that the efficiency of the process was largely at the cost of the residents, with staff dismissing notions of conversation and failing to allow residents to partially dress themselves or make choices regarding clothing. Additionally, difficult deadlines placed on staff, such as getting all residents ready for a meal, resulted in staff choosing to spend all of their time physically assisting residents rather than providing verbal prompts during the dressing process.

The results of the study were congruent with previous studies that demonstrated a high degree of dependence on staff in completing activities such as dressing. Cohen-Mansfield et al. (2006) argued that instead of viewing the dressing procedure as a time constrained hectic process, staff members should view the process as a therapeutic activity for residents with the primary goal being to increase independence through prompting techniques, with a decreased reliance on physical assistance. Brief staff training regarding the importance of promoting independence in older adults using graduated prompts and praise prior to providing physical assistance, has been shown to be advantageous for staff and residents (Engelman et. al, 2002; Engelman et. al, 2003).

Engelman et al. (2002) assessed the impact of training certified nursing assistants (CNAs) to implement a graduated prompting procedure (SLP) to increase independent dressing behavior. During baseline, staff was observed to provide complete assistance in dressing all participants. A 60 minute staff training comprised of instruction, modeling,

role-play, and feedback, was delivered to 2 CNAs in an assisted living dementia care unit. CNAs were taught correct implementation of the SLP procedure during residents' morning dressing routine with resident independence being the primary focus of training. Nine directives were provided that consisted of 1) knocking on the door prior to entering resident's room, 2) greeting the resident, 3) staff introduction, 4) gathering materials needed for task completion, 5) informing the resident of the task to be completed, 6) waiting 5 seconds for resident response, 7 & 8) providing at least 2 less intrusive prompts prior to physical guidance, and 9) providing praise within 5 seconds of step completion regardless of the level of assistance needed. Three residents with a medical diagnosis of moderate or severe dementia with Mini-Mental Status Exam (MMSE) scores ranging from 2 to 19 participated. Resident dressing independence, resident dressing time, and range of motion (ROM) were assessed. Resident independence was measured by recording the most intrusive level of prompting provided during each dressing step. A satisfaction questionnaire was administered to each CNA within 1 week following the last observation study.

Following implementation of the SLP procedure, Engelman et al. (2002) reported that independent dressing behavior increased for all three residents. At baseline, the three residents were provided with complete assistance during their dressing routines. Two residents demonstrated the ability to complete the dressing task when less intrusive prompts were provided. One resident increased their dressing independence from complete assistance to complete independence. Both CNAs reported high rates of satisfaction while implementing the SLP procedure but displayed concerns that the procedure took too much time. Results reflected only a minimal increase of 4.34 minutes

in mean resident dressing time during the SLP condition as compared to baseline. At follow-up, mean resident dressing time decreased by 3.80 minutes. Thus, SLP increased mean resident dressing time by less than one minute from baseline to follow-up.

Engelman et al. (2002) demonstrated that implementation of the SLP procedure was successful in increasing dressing independence for older adults with moderate to severe dementia. SLP established potential as a method that can contribute to independence and therapeutic care for older adults that have difficulty performing activities of daily living independently, in particular, dressing. Engelman et al. (2002) suggested simplifying the prompting procedure to make it easier for CNAs to perform.

In a follow-up study, Engelman et al. (2003) assessed the impact of a simplified, brief 30 minute staff training procedure to increase utilization of a graduated prompting procedure to increase dressing independence in three residents diagnosed with dementia. Researchers attempted to avoid issues encountered in previous trainings by shortening the duration of training, simplifying the SLP procedure, and decreasing reliance on others to help implement the procedure. Two CNAs participated in a training session comprised of stating the primary goal of increasing dressing independence using SLP, instruction, role-play, and feedback to increase their knowledge and performance in implementing the SLP procedure during morning dressing routines. A multiple baseline across participants design was employed, with CNAs' use of the SLP procedure serving as the primary dependent variable. Resident independence and dressing time were also assessed. Engelman et al. (2003) simplified the previous training (Engelman et al., 2002) by reducing the amount of directives given. CNAs were provided with three directives as compared to nine, that consisted of using at least two less intrusive prompts prior to using

physical guidance, waiting at least five seconds prior to providing an additional prompt, and providing verbal praise within five seconds of step completion, regardless of the amount of assistance needed. Data collection consisted of the CNAs indicating whether or not they used the SLP procedure during resident dressing and by rating resident's dressing independence on a scale from 0 for total assistance to 100 for independent dressing.

Engelman et al. (2003) demonstrated that a brief CNA training was effective in increasing the use of the SLP procedure to increase resident dressing independence. Notably, resident dressing time did not increase during implementation of the SLP procedure, providing further evidence of the efficiency of SLP.

Of the research that has been published regarding increasing engagement in older adults, there has been evidence that prompts and praise can serve to increase independence in completing ADLs (Buchanan, 2006). Most studies conducted with dementia patients designed to promote increased independence have relied on lengthy staff trainings designed to use graduated reinforcement and prompting techniques to increase engagement or independence for a specific ADL (Engelman et al., 2002). Due to time and monetary constraints encountered in nursing home facilities, lengthy trainings may not be feasible. Although lengthy trainings have been reported to be successful in demonstrating that staff education is effective in increasing quality care for nursing home residents, emphasis should be placed on devising training programs that are effective, as well as efficient. Additionally, it is of great importance to resolve some of the key staff concerns reported by Teri et al. (2009) by explicitly stating the benefits of training in relation to how implementation of the procedure would ultimately make their duties

easier in the future. Empirical evidence regarding the effectiveness and efficiency of procedures demonstrated in other nursing facilities may also serve to provide a rationale for staff to be less reluctant in adopting behavioral interventions. Satisfaction questionnaires may also be a more efficient way to determine staff concerns with training and interventions and to evaluate social validity of procedures. Additionally, factors related to transfer of training should also be considered such as supervisory support, by providing supervisors and administrators with an outline to summarize the training components. This may in turn reinforce staff participation since they may receive rewards and encouragement for implementing the procedures (Teri et al., 2009). These suggestions will be used to improve training in the current study.

Further research is needed to provide robust evidence that brief staff trainings, with emphasis on staff implementation of SLP, will be effective in increasing independence in ADLs for older adults with cognitive impairments (Engelman et al., 2002). Due to the prevalence of difficulty demonstrated by residents in completing ADLs such as dressing, caregivers need to acquire the proper education to make the ADL process as therapeutic as possible (Cohen-Mansfield et al., 2006). This can be achieved by reinforcing independent behaviors and providing prompts prior to providing complete assistance (Engelman et al., 2002; Roger et al., 2000). Engelman et al. (2003) suggests that future research aim to answer questions regarding generalization of treatment effects for multiple ADLs using SLP, since this still remains unclear.

The purpose of the current study was to evaluate a brief staff training procedure to educate nursing staff on the correct implementation of the SLP procedure to increase independence for older adults with cognitive impairments in completing ADLs.

Specifically, SLP was implemented during the residents' morning dressing routine. This study intended to extend previous research (Engelman et al., 2002; Engelman et al., 2003) by assessing generalization of independent behavior to an ADL that was not directly taught using the SLP procedure, particularly grooming (e.g., hair brushing). Although previous studies involving older adults with cognitive impairments have not particularly focused on generalization across ADL behaviors using SLP procedures, research conducted with children diagnosed with autism provides evidence that when specific prompts are provided, skills taught during ADL and leisure activities can generalize to new untargeted skills with little to no additional training (MacDuff, Krantz & McClannahan, 1993; Pierce & Schreibman, 1994).

Generalization occurs by making a different but similar response (e.g., independent self-care behavior) to the same stimulus (e.g., verbal instruction, "It's time to get dressed", "It's time to brush your hair"). More specifically, response generalization refers to the extent to which the participant emits an untrained response (e.g., independent hair brushing) that is functionally equivalent to the trained target behavior (e.g., independent dressing) (Cooper, Heron, & Heward, 2007). Both of these tasks are functionally similar in that they are both components of the residents' morning care routine, function as a means of maintaining independence in self-care, and will result in positive social reinforcement from staff. Independent behavior serves the same function as dependent behavior by eliciting staff attention. A shift from an independence-ignore script previously described by Baltes et al. (1994) to an independence-support script was desired. Teaching independent behavior as an alternative to dependent behavior to occasion attention from staff, was expected to modify the reinforcement contingencies

currently maintaining dependent behavior. Since residents were being provided with reinforcement for independent self-care behaviors, it was expected that independent behavior would be observed while residents performed other self-care tasks as well.

Method

Participants

Staff. Two female members of the nursing staff were recruited as participants for this study. All staff participants recruited were responsible for assisting residents in completing ADLs and were employed by a nursing facility located in Northeastern Ohio. The average time employed at the facility for the staff participants was 12 years. These participants had no formal training on how to implement the SLP procedure prior to this study. Informed consent was obtained from each staff member prior to data collection.

Residents. Six female residents from the assisted living unit were recruited as participants for this study. Resident participants ranged in age from 86-95 years old (*M*=91). The length of time living at the facility ranged from 2-9 years (*M*=4.7). Inclusionary criteria consisted of demonstrating the ability to respond to verbal commands such as answering questions, requiring assistance while dressing, and scoring between 10-20 on the Mini-Mental State Exam (MMSE), indicating moderate cognitive impairments. Informed consent was obtained from each resident prior to beginning the study.

Setting and Materials

Training and observation setting. The 30 minute training session was conducted at the nursing facility during staff's scheduled work shift. Observation sessions were conducted in the resident's room. Residents resided in a private room that contained a bed, television, dresser, night stand, chair, and personal items. Each residence was comprised of a bedroom and bathroom area. All sessions took place in the resident's room during their typical morning care routines. During each observation

session, the observer unobtrusively monitored the resident and staff member by standing outside of the resident's direct line of sight. Each observation session lasted approximately 10 minutes and continued until the entire dressing task sequence was completed.

Materials. Materials provided to staff participants at the onset of training included handouts containing information on the correct implementation of the SLP procedure for the dressing task sequence (See Appendix A). During all phases of the study, a stopwatch was used to record resident dressing time, starting when the first directive (e.g., "It's time to get dressed.") was provided and ending when the last step of the dressing sequence was completed. The most intrusive level of prompt provided by the nursing staff for each step in the dressing task sequence, and whether or not praise was provided following each completed step, was recorded on a data sheet (See Appendix B). Materials necessary to complete the ADL task were provided to the resident during SLP and generalization conditions (e.g., shirt, pants, shoes, hair brush etc.).

Mini-Mental State Examination. The MMSE was administered to each resident participant approximately two weeks prior to baseline and within two weeks following training. The MMSE (See Appendix C) measures memory, calculation, orientation in space and time, language, and word recognition (Proust-Lima, Amieva, Dartigues, Jacqmin-Gadda, 2007). Each question answered correctly was scored as one point with a maximum of 30 points possible, while scores between 10 and 20 indicated moderate impairments. The MMSE was administered verbally by the experimenter. Questions that the resident found difficult were repeated only once. The MMSE took approximately 10

minutes to administer. Pre- and post- intervention scores on the MMSE were compared to indicate whether changes in cognitive functioning occurred during the course of the study (See Table 1).

The MMSE is the most widely used brief psychometric test to measure global cognitive functioning and is a well-validated quantitative measure in various populations as a screening tool for dementia (Jacqmin-Gadda, Fabrigoule, Commengeo, & Dartigues, 1996). Folstein, Folstein, & McHugh (1975) reported that for samples of psychiatric and neurologic patients, inter-rater reliability was 0.82 or higher. The test-retest reliability estimates for the MMSE for intervals of less than two months range from 0.80 to 0.95 (Crum, Anthony, Bassett, & Folstein, 1993). Overall, these reliability estimates are consistent with those reported for other brief cognitive screenings (Crum et al., 1993). The sensitivity of the MMSE to identify individuals with dementia across 25 studies was approximately 75% (Crum et al., 1993). Additionally, low MMSE scores have been shown to correlate with dependency in completing ADLs and IADLs (Jacqmin-Gadda et al., 1996).

Experimental design

A multiple baseline across participants with probes design was employed to evaluate the effectiveness of the SLP intervention in relation to resident independence. Benefits of the multiple baseline design include being able to determine functional relations without withdrawal of an effective treatment (Cooper et al., 1997). Nursing staff identified residents that had difficulty completing dressing and grooming tasks independently. Baseline was implemented simultaneously across participants. After obtaining a stable trend during the baseline condition, the SLP procedure was

implemented for the first and fourth participant only. After a change in independence was observed for participant one and four following implementation of SLP, the SLP procedure was implemented with the next participant and so on. An increase in at least one level of independence was required prior to implementing SLP for the additional resident participants (i.e., physical guidance to gestural/model prompts). Generalization probes were conducted during baseline and intervention phases by monitoring the resident as they completed a grooming task (e.g., hair brushing) that was not directly taught using SLP. Staff were also monitored during the intervention phase to determine whether or not they were implementing the SLP procedure correctly. A follow-up observation session was conducted one month following the last training session to determine maintenance of treatment effects, as well as to investigate transfer to other untrained ADLs.

Observation procedures

The experimenter was present during baseline and reliability observations to monitor resident and staff interactions (i.e., level of assistance provided, number of praise statements provided, treatment integrity). During the intervention phase, staff recorded dependent measures for each ADL task on a data sheet. Following SLP training, staff members practiced data collection to become familiar with data collection forms and procedures. Staff members continued until they demonstrated at least 90% accuracy in recording data. This was determined by comparing the data collected by the staff member to that of the experimenter. Observations of residents were conducted for 2-3 days per week onsite. Each observation session lasted approximately 10 minutes per day, per resident.

Dependent measures

Resident independence. The primary dependent variable measured was the resident's level of dressing independence. Generalization of treatment effects to a grooming task was also measured. Level of independence was determined by the highest level of prompting needed to complete each step in the ADL sequence (verbal, gestural, physical guidance, or complete assistance). Only the most intrusive prompt for each step in the task sequence was recorded. Verbal prompts were defined as direct verbal instruction delivered to the resident by the staff member (i.e., "Put your arm through the hole"). Gestural prompts were defined as either a partial or complete visual representation of the step (i.e., pointing to the resident's shirt). Model prompts were defined as the staff member directly demonstrating the step (i.e., "Put your arm in the hole like this."). Physical guidance was defined as the use of the staff's hands to guide the resident's body to complete a step. Complete assistance was defined as the staff member performing the entire step for the resident. The level of independence demonstrated for the dressing sequence was determined by recording the level of prompt provided most frequently to complete steps in the dressing sequence. Level of assistance was coded into five categories: (0) complete assistance; (1) intrusive assistance (physical guidance); (2) minimally intrusive assistance (gestural/model prompts); (3) verbal assistance (verbal prompts); and (4) complete independence (no prompts). Scoring was based on the data sheet that each experimenter and/or staff member completed regarding level of assistance provided to the resident. Certain steps on the dressing task sequence outlined on the data sheet did not have to be performed in their exact order (e.g., putting

on shirt prior to putting on pants), with the exception of those steps that required the completion of a previous step in order to be executed (i.e., pulling pants up from waistband could only be completed once both legs have been inserted).

Resident dressing time. The total number of minutes each resident took to complete the dressing task sequence was recorded during baseline, intervention, and follow-up. A dressing session was defined as the time it took to complete all dressing steps in the dressing task sequence. Timing began once the directive to begin the dressing task sequence was provided, or when the resident began engaging in any step of the dressing task sequence independently. The observer stopped timing when the last step in the dressing task sequence was completed.

Internal Validity

Interobserver agreement. Independent observation of staff and resident behavior was conducted for 33% of SLP sessions (Cooper et al., 2007). The experimenter monitored and independently scored resident behavior and compared it to the observations conducted by the staff participant. Staff participants were trained in data collection until they reached 90% accuracy prior to implementing the SLP procedure. Interobserver agreement for resident independence was calculated by dividing agreements by the sum of agreements plus disagreements and multiplying by 100%. Total duration interobserver agreement for resident dressing completion time was calculated by dividing the shortest amount of time (min) recorded, by the longest number of time recorded by each observer, then multiplied by 100 percent. Mean interobserver agreement for dressing independence was 94% (range 78% to 100%). IOA for resident dressing time was 99% (range 88% to 100%).

Treatment integrity. Correct implementation of the SLP procedure was evaluated for 37% of SLP sessions by the independent observers recording staff behaviors as correct or incorrect (i.e. "Did staff provide two less intrusive prompts prior to providing physical guidance or complete assistance?"). A checklist of appropriate staff responses was used and the percentage of correct responses was calculated (See Appendix D). Percentage of correctly performed responses was calculated by summing the total number of correctly performed steps and dividing this number by the total possible responses during a SLP dressing session. The mean percentage of correct responses for both staff members was 96 percent (range 88% to 100%).

Procedures

Task Analysis. Prior to implementing the SLP procedures, a task analysis was completed for the dressing routine. This task analysis provided a complete sequence of steps to perform the dressing task. For instance, dressing included holding pants and opening the waistband, inserting the right leg into the right leg hole of the pants, inserting the left leg into the left leg hole of the pants, and pulling the pants up from the waistband. The task analysis was used to develop an observation data sheet in which the experimenter and staff indicated the level of prompts provided for each step, praise statements provided and resident dressing time (See Appendix B).

Baseline. Baseline data was collected for at least three sessions or until a steady trend was identified, and occurred simultaneously for all participants. This consisted of the experimenter recording the level of assistance provided during the resident's dressing routine, resident dressing time, and the number of praise statements provided. Staff were informed that the experimenter would be monitoring resident behavior to determine how

much assistance they required in completing ADLs. Once a stable trend in dressing independence was identified, all staff participants participated in a 30 minute training session. The SLP procedure was then implemented for participant one and four. Once participant one and four demonstrated an increase in independence following implementation of the SLP procedure, SLP was implemented for resident participant two and five. Once participant two and five demonstrated an increase in independence, SLP was implemented for the third and sixth resident participant. Probes were also conducted for grooming during baseline to determine independence in completing non-target ADLs.

System of Least Prompts Training. Staff participated in a 30 minute training session that focused on resident independence and implementation of the SLP procedure. Training consisted of instruction, modeling, role-play, and feedback. Emphasis was placed on explaining the benefits of SLP for staff and residents, with evidence provided from previous empirical studies demonstrating the effectiveness and efficiency of the procedure. Following training, staff practiced collecting data in the natural environment until they demonstrated at least 90% accuracy. This familiarized staff with data collection forms, procedures for recording observations, and the proper use of the stopwatch. Training materials in the form of handouts were provided to the staff, outlining the steps in performing SLP for the residents' dressing routine. Staff were instructed to consult these materials or contact the experimenter if they had difficulty recalling correct implementation of the procedure following training.

Staff was instructed to gather all materials needed to complete the dressing sequence and provided a verbal directive such as "It's time to get dressed" immediately prior to engaging the resident in the target dressing task sequence. The dressing task

sequence included nine steps that must be completed to put on a shirt and pants. The following directives were used to teach the SLP procedure adapted from Engelman et al. (2003): (a) Provide at least one but no more than two less intrusive prompts (verbal/gestural/model) prior to using physical guidance for each dressing step. (b) Wait 10 seconds for resident response after prompt is given before providing another prompt. (c) Regardless of the level of prompt provided for a step, provide a descriptive verbal praise statement ("Great job putting on your shirt today") within five seconds of the completion of a dressing step.

Nursing staff provided a verbal directive ("It's time to get dressed") to initiate the SLP procedure and inform the resident of the task performed. The staff member waited 10 seconds for the resident to emit the target response (pick up shirt/pants). If the resident emitted an incorrect or no response, staff provided a verbal prompt first ("Mary, your shirt is right here."). If the resident did not respond or emitted an incorrect response, staff then provided a gestural/model prompt (staff pointed to shirt and/or demonstrated how to complete the step, ("Put your arm in the hole like this") for the first step in the task sequence. If resident did not emit the correct response of completing the dressing step following two less intrusive prompts (verbal/gestural/model), staff used physical guidance to assist the resident in completing the step. If the step was not completed using physical guidance, staff provided complete assistance for that step and proceeded to the next step by providing a verbal directive to initiate the sequence. Descriptive verbal praise was provided to each resident regardless of the level of prompting needed, for each step in the task sequence. Praise was not provided when complete assistance was necessary to complete a step since the goal of the study was to

reinforce independent behavior, not dependent behavior. Prompts and reinforcement were faded once the resident demonstrated the ability to complete 80% of the entire dressing task sequence independently over two consecutive weeks (i.e., 4-6 sessions).

Generalization. Generalization probes were conducted identical to baseline sessions except that staff provided the materials necessary to complete the ADL task sequence and provided a verbal directive to initiate the task (e.g., "It's time to brush your hair."). No additional prompts were provided. These probes were conducted before and after implementation of the SLP procedure for the non-targeted ADL to determine whether transfer of treatment effects were apparent. The extent of change in resident independence for untrained ADL changes was evaluated. Consequently, it was expected that when a resident was provided with the initial verbal directive (e.g., "It's time to brush your hair") and provided with the necessary materials to complete the ADL task sequence (e.g., hair brush), that may serve as a discriminative stimulus to complete the ADL grooming task even though this task sequence was not directly trained using SLP. In addition, since independent behavior was being reinforced during the dressing routine, independent behavior was expected to increase in frequency. By providing the resident with an opportunity and reinforcement to engage in independent behavior for a specific ADL, that was expected to encourage the resident to engage in independent behavior for other ADL tasks as well.

Follow-up. A follow-up probe was conducted for each resident to determine if changes in independence during treatment were maintained one month following treatment.

Social Validity. A brief satisfaction questionnaire was administered to staff and residents within one week following the last observation session. It was important to assess social acceptability of intervention procedures in order to ensure that all relevant parties agreed that behavior change efforts produced a favorable impact. Carr, Austin, Britton, Kellum, and Bailey (1999) found that social validity measures were reported in less than 13% of articles in the Journal of Applied Behavior Analysis (JABA). While researchers develop evidence-based practices, reliability and validity tend to receive a great amount of time and attention. Limb and Chance (2006) suggested that in addition to reliability and validity measures, the more practical components such as whether or not the findings could actually be adopted by consumers to establish usable best practices should also be considered. Limb et al., (2006) further stated that the social validity approach may be an important component in bridging the gap between research and practice.

***Resident satisfaction*.** Within one week after the last observation session, each resident participant completed a brief three item satisfaction questionnaire, indicating their degree of satisfaction with their independence and quality of life (See Appendix E). Each question required the resident to circle a response on a five point scale ranging from "completely dissatisfied" to "completely satisfied." Residents who demonstrated difficulty reading the questionnaire had the questionnaire read aloud by the experimenter and their verbal responses were recorded.

Staff Satisfaction. Within one week after the last observation session, each staff participant completed a brief five item satisfaction questionnaire, indicating their satisfaction in implementing the SLP procedure and the perceived impact of the SLP

procedure on resident quality of life (See Appendix F). Each question required the staff participant to circle a response on a five point rating scale ranging from "completely disagree" to "completely agree". Additional space was provided for comments regarding their experience implementing the procedure and recommendations for improving future use of SLP in assisted living facilities.

Results

The results indicate that the SLP procedure was effective in substantially increasing dressing independence for all six participants. All staff members were observed to provide complete assistance for the majority of dressing steps during baseline. Once the SLP procedure was implemented, the level of assistance became considerably less intrusive. All participants increased their dressing independence significantly from complete assistance to completing the majority of the dressing steps independently.

Resident dressing independence. Figures 1 and 2 illustrate each resident's mean level of independence during the dressing task sequence. Each level of assistance was coded as follows: A score of zero signifies complete assistance, one indicates intrusive assistance (i.e., physical guidance), two signifies minimally intrusive assistance (i.e., gestural/model prompt), three signifies verbal assistance (i.e., verbal prompts), and four indicates complete independence. The most intrusive prompts for each dressing step were scored and summed. The sum of prompts was divided by 36 (i.e., 9 dressing steps x 4 for complete independence) and multiplied by 100%. Triangles indicate generalization probes conducted during the hair grooming task. Squares represent dressing independence, and a circle represents the follow-up probe. When only one circle is depicted during follow-up, the levels of independence for both tasks were identical.

At baseline, Participant 1 did not complete any steps of the dressing process independently. During the SLP procedure, Participant 1 increased her mean dressing independence from 0% to 83% of steps completed independently. Participant 2 increased her dressing independence from 11% at baseline to 100% during SLP. During baseline,

Participant 3 completed an average of 4% of the dressing task sequence independently. During SLP, Participant 3 increased her dressing independence to 67% of steps completed independently. Participant 4 and 5 increased their mean level of independent dressing from 0% during baseline, to 83% of steps completed independently following implementation of the SLP procedure. During baseline, Participant 6 completed an average of 6% of steps independently, and this increased to 100% of steps performed independently following implementation of SLP. At 6-week follow-up, all participants maintained their dressing independence to the exact level that was observed during the last SLP observation session.

Resident dressing time. Mean resident dressing time decreased for five out of six participants from baseline to the SLP condition. The overall mean number of minutes necessary to complete the dressing task sequence for all residents during baseline was 7.5 minutes. Overall mean dressing time decreased to 5.7 minutes during baseline, reflecting a decrease of 1.8 min. Mean resident dressing time decreased from 5.7 min during SLP to 2.5 min during follow-up, reflecting a decrease of 3.2 minutes. Overall, from baseline to follow-up, mean resident dressing time decreased by approximately 5 minutes. Table 2 depicts the changes in mean dressing time during baseline, SLP, and follow-up conditions for each participant.

Generalization. Figures 1 and 2 depict each participant's level of independence for grooming. The SLP procedure was not used during generalization probes. Specifically, Generalization probes for hair grooming were coded as follows: A score of 0% signifies complete assistance, 25% percent indicates intrusive assistance (i.e., physical guidance), 50% percent signifies minimally intrusive assistance (i.e.,

gestural/model prompt), 75% percent signifies verbal assistance (i.e., verbal prompts), and 100% indicates complete independence. Generalization of independent behavior was evident across ADLs for all participants. When resident dressing independence increased, grooming independence increased as well. Notably, all participants demonstrated complete independence in grooming following implementation of the SLP procedure. For Participants 1, 3, 5, and 6, independent grooming increased from complete dependence during baseline to complete independence during SLP. During baseline, participant 2 was provided with gestural and verbal prompts to complete grooming. Participant 2 demonstrated complete independence in grooming following implementation of the SLP procedure. During baseline, complete dependence or physical guidance was needed for participant 4 to complete the grooming task. Participant 4 demonstrated complete independence in grooming during SLP.

These results provide evidence that the SLP procedure, when implemented to increase independence for one ADL, can increase independence in another ADL that was not directly targeted. More specifically, once staff began providing prompts and praise to residents when they attempted to complete steps of the dressing task sequence independently, independence also increased for grooming, in which the SLP procedure was never implemented.

Satisfaction. ***Staff.*** In response to items on the satisfaction questionnaire ("Overall, I am completely satisfied with the SLP procedure.", "I believe that the SLP procedure has the potential to increase resident quality of life by providing opportunities for them to be more independent.", "The SLP procedure was easy to implement.", and "I would be willing to use this procedure in the future."), both staff participants reported

that they "completely agreed" with each statement. Consistent with Engelman et al. (2002), staff reported that they thought the SLP procedure took more time than providing complete assistance during the dressing process, although one staff participant indicated that they "agreed" that SLP was a time efficient method and the other recorded "neutral". Following the completion of data collection and presentation of the results, the staff members reported that they may have felt like more time was being taken with each resident since they were monitoring the resident rather than providing hands-on assistance.

Residents. In response to items on the resident satisfaction questionnaire ("How satisfied are you with the amount of *control* you have in completing daily tasks for yourself if you choose?, "How satisfied are you with your independence in completing daily tasks?", and "Overall, how satisfied are you with your life?"), Participant 1 indicated that she was "completely satisfied" with all three items relating to her quality of life. Participants 2 and 4 indicated that they were "completely satisfied" with the amount of control they have in completing tasks for themselves and were "satisfied" with their level of independence and life overall. Due to an injury, a social validity questionnaire was not completed for participant 3. Participants 5 and 6 indicated that they were "satisfied" with the amount of control they have in completing daily tasks for themselves and were "completely satisfied" with their lives overall.

Discussion

This study provides further support and extends previous research (Engelman et al., 2002) by providing evidence that the SLP procedure can be an effective and efficient way of promoting independent behavior while demonstrating that generalization of independent behavior can occur for untaught ADLs in older adults. Notably, mean resident dressing time decreased for five out of six participants.

During baseline, the majority of residents were provided with complete assistance during dressing and grooming tasks. Once SLP was implemented during dressing, a significant increase in independent dressing and grooming behavior was apparent for all participants. Hence, independent behavior generalized to an untaught ADL, since dressing was the only ADL targeted while implementing SLP. Staff was instructed to withhold prompts and praise during the grooming task in order to assess generalization. Generalization of independent behavior to an untaught ADL may have occurred due to changes in the contingencies of reinforcement that occurred during the dressing task. By providing attention for independent behavior rather than dependent behavior, the contingencies maintaining dependent behavior were no longer in affect. Reinforcement was only provided contingent upon the participant emitting independent dressing behavior. This social reinforcement may have increased the frequency of the residents' independent behavior due to the reinforcing consequences associated with those responses. More specifically, when residents attempted to engage in the dressing task sequence independently, staff provided descriptive verbal praise (e.g., "Great job putting on your shirt! I like how you're trying to get dressed by yourself today!"). Dependent behavior such as minimal involvement in morning ADL routines no longer resulted in

reinforcement. Since independent behavior was functionally equivalent to dependent behavior in that it elicited attention from care staff, there was no longer a need to ask for assistance when it was unnecessary since the residents were being provided with attention for alternative independent behaviors. The SLP procedure allowed staff to support independent behavior, while ignoring dependent behavior, reflecting a shift in the script previously described by Baltes et al. (1994) from an independence-ignore to an independence-support script. Generalization may also have occurred due to the temporal distance between the dressing and grooming tasks since grooming occurred immediately following dressing for each resident. Since generalization of independent behavior to other ADLs has not been assessed using the SLP procedure with older adults with cognitive impairments living in assisted living facilities, more support is needed to provide robust evidence of generalization across multiple ADLs. The amount of steps needed to complete an ADL may have an impact on generalization and mastery. Future research should aim to provide further support of this notion while targeting alternative ADLs such as toileting, bathing, transfer, eating, and teeth brushing as well as more complex IADLs.

Engelman et al. (2002) reported that excessive prompting while using SLP had the potential to increase verbal and physical aggression in some of their participants. Effort was made to avoid frustration and agitation for resident participants by limiting the amount of less intrusive prompts given prior to providing a more intrusive prompt to assist the resident during dressing. For instance, the staff participants were instructed to provide two, but no more than two, verbal prompts prior to providing a more intrusive level of prompt. Effort was made to avoid these types of emotional reactions since

creating and maintaining a positive environment was desired, in which independent behavior was reinforced and dependent, maladaptive behaviors were ignored. During direct observation and reports given by staff participants, no verbal or physical aggression occurred during the dressing process for any of the resident participants. All resident participants indicated that they were "satisfied" or "completely satisfied" with the amount of control they had in completing daily tasks for themselves if they chose, their level of independence, and their overall life satisfaction, as stated on the social validity questionnaire that was administered to each resident following the last SLP observation session. During training, emphasis was placed on informing staff that this process was intended to be a positive, therapeutic experience in which praise should be delivered on a consistent and contingent basis to project to the resident that they were being successful at completing the dressing task. Positive reinforcement was provided for all attempts to engage in independent behavior regardless of the level of assistance necessary during the dressing task, with the exception of complete assistance since further reinforcement of dependent behavior would have been counterproductive.

Staff reported that once they began implementing SLP for dressing, that they were more inclined to allow the resident more opportunities to engage in independent behavior for other ADL tasks as well. Direct observation of the nursing staff substantiated their claims. Staff typically provided the materials needed to complete untargeted ADLs along with one verbal directive to initiate untargeted ADL tasks such as face-washing and teeth/denture brushing following implementation of the SLP procedure. Since this was beyond the scope of this study, future research should provide data-based evidence as to whether or not trained staff members would begin using the SLP

procedure during other ADL tasks once an increase in independent behavior was observed during the target ADL task. During direct observation at baseline, staff typically provided complete assistance for the majority of these untargeted ADLs.

A potential limitation to this study involves the gender of the participants. Due to a request from the Human Rights Committee, the observer and participants' gender was required to be the same. As a result, all individuals participating in this study were female. Although further evidence is needed, similar results may be seen for both genders and with older adults without cognitive impairments. Also, due to an injury, the MMSE, social validity questionnaire, and follow-up data were not able to be obtained for Participant 3. It is also unclear as to whether or not similar changes in independent behavior would have occurred if descriptive verbal praise alone was provided, considering the substantial increase in verbal interactions once SLP was implemented as compared to baseline.

Future research should aim to investigate whether generalization of the use of SLP across staff would occur following the training of select staff members in a facility. More specifically, would the benefits of implementing the SLP procedure projected by trained staff lead other staff members to adopt the same strategies? It may also be important to evaluate the impact of using the SLP procedure during all ADL tasks throughout the day. The SLP procedure as a standard in long term care facilities would be a promising method for promoting independence and quality care in accordance with OBRA regulations. Due to the effectiveness, efficiency, and minimal resources needed to implement the SLP procedure (i.e., training time, materials, time spent with resident), implementation in assisted living facilities would be advantageous.

These results suggest that when environmental adaptations are made to provide opportunities for independence for older adults with cognitive impairments, an increase in independent behavior can occur, potentially increasing the quality of life for these individuals. These environmental adaptations are easy to implement and can be utilized by anyone providing care to older adults. Utilization of the SLP procedure may assist in the delay of placement into long-term care facilities, potentially resulting in less financial and emotion burden for older adults and their families.

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Table 1. Mini-Mental State Examination scores for all participants. The MMSE was administered one week prior to baseline and one week following the last SLP observation session. The MMSE has a total of 30 possible points.

Participant	Pre MMSE	Post MMSE
1	11	10
2	20	22
3	13	N/A
4	11	12
5	20	21
6	20	20

Table 2. Mean resident dressing time in minutes and seconds. The change in dressing time from each phase is depicted in the table.

PARTICIPANT	BL	SLP	Change (BL-SLP)	FOLLOW-UP	Change (SLP-Follow-up)	Change (BL-Follow-up)
Participant 1	7.36	4.93	-2.43	3.53	-1.40	-3.83
Participant 2	5.52	4.45	-1.07	2.08	-2.37	-3.44
Participant 3	9.91	10.45	+0.54	N/A	N/A	N/A
Participant 4	5.79	3.91	-1.88	2.50	-1.41	-3.29
Participant 5	7.53	3.24	-4.29	3.12	-0.12	-4.41
Participant 6	9.12	4.89	-4.23	1.58	-3.31	-7.54

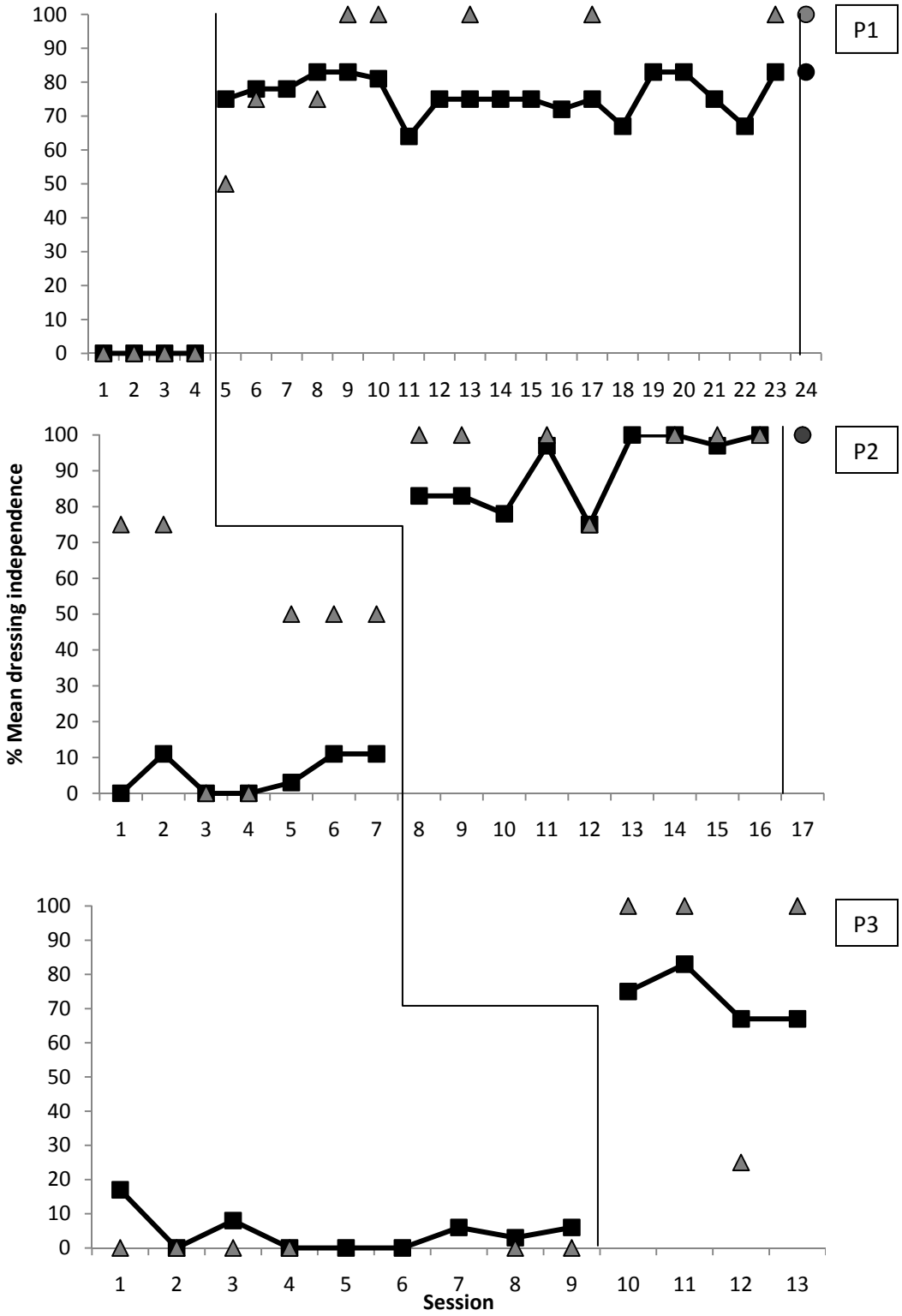


Figure 1. Percentage of mean dressing and grooming independence for Participants 1-3 for each session across baseline, SLP, and generalization sessions. Squares indicate dressing independence while triangles indicate grooming independence.

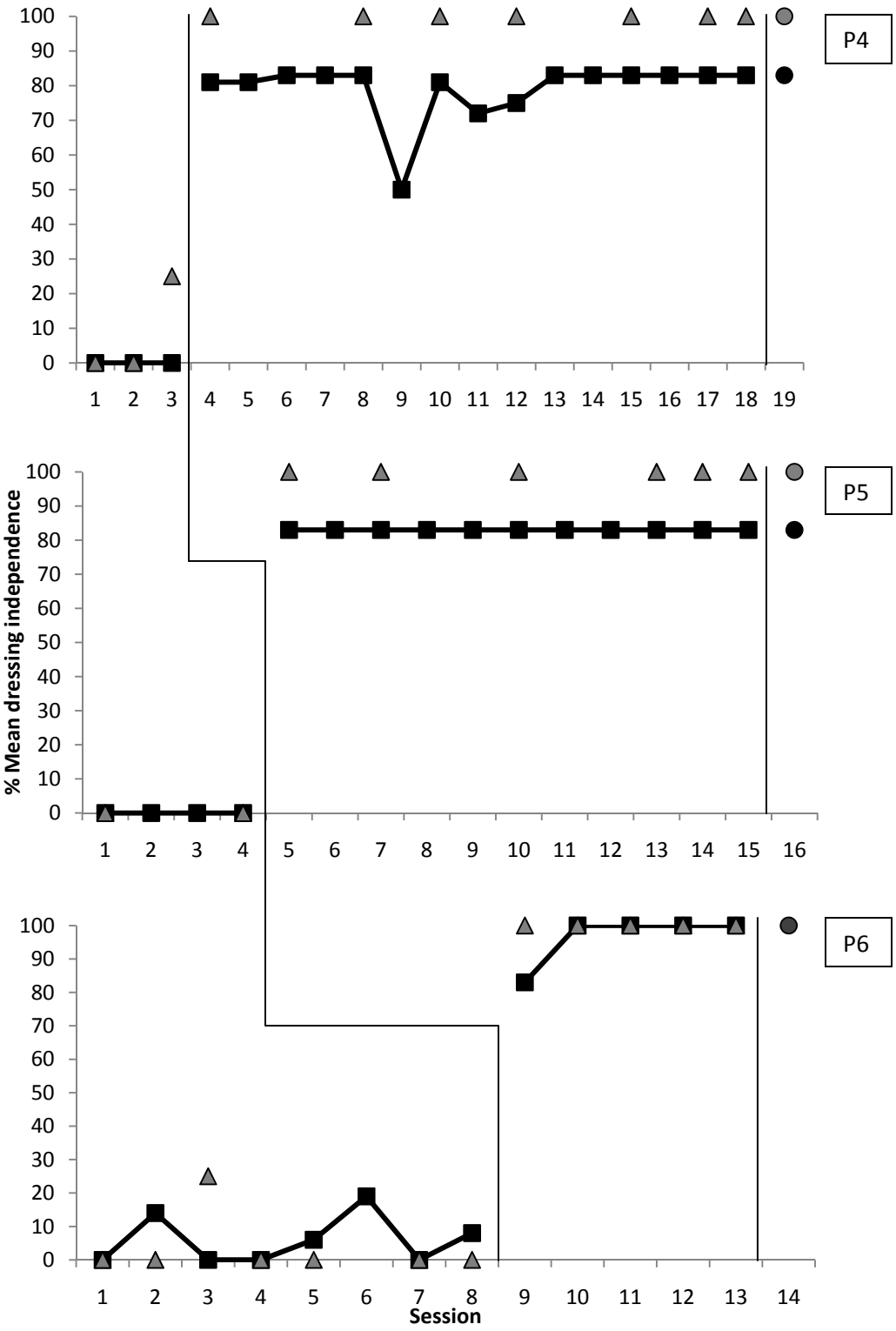


Figure 2. Percentage of mean dressing and grooming independence for Participants 4-6 for each session across baseline, SLP, and generalization sessions.

Appendix A

System of Least Prompts (SLP)

Goal: Increase resident independence in completing activities of daily living (ADLs), specifically dressing and grooming.

Benefits: Residents: Residents may maintain or regain their ability to complete self-care tasks, potentially leading to increased quality of life, self-esteem, and independence.

Staff: By increasing resident independence, less hands-on assistance will eventually be required by direct care staff. This may reduce caregiver stress and amount of time required to complete daily routines for residents.

Other facilities have used this procedure: The System of Least Prompts has been used in other facilities and has demonstrated to be effective in increasing resident dressing independence. SLP has also been shown to be an efficient method, only increasing resident dressing time by a few minutes initially, and eventually decreasing again once staff becomes comfortable implementing the procedure. One study reported that the SLP procedure did not increase resident dressing time at all. Staff reported that the SLP procedure was easy to implement and beneficial for both staff and residents.

What is SLP? : The System of Least Prompts involves providing less-intrusive prompts (e.g., verbal, gestural, model) prior to providing physical guidance or complete assistance. This prompting strategy provides the resident with an opportunity to complete tasks independently. Reinforcement (e.g., descriptive verbal praise) is provided for attempts to complete tasks independently, therefore increasing the future frequency of those independent responses. No reinforcement is provided for dependent behavior (i.e., complete assistance).

What prompts/level of assistance will be used?

Complete independence: Resident performs the dressing step with no assistance needed
Verbal prompt: direct verbal instruction delivered to the resident by the staff member (e.g.,"Next, put your arm through the hole", "Pull the shirt down over your stomach", etc.)
Gestural prompt: a partial or complete visual representation of the dressing step (e.g., Point to resident's shirt, "Pull your shirt down like this" (using a motion), etc.)
Model prompt: staff member directly demonstrates the step (e.g., "Pick up your shirt like this", "Put your arm through the hole like this")
Physical guidance: use of the staff's hands to guide the resident's body to complete the step (e.g., Guide the residents arm through the shirt hole, staff puts hands on top of resident hands to pull up pants, etc.)
Complete assistance: staff member performs the entire dressing step for the resident

*You can choose which prompts you want to provide (verbal/gestural/model) prior to providing physical guidance. Record the most intrusive level of prompt provided. For instance, if you provided verbal prompts but then had to resort to using physical guidance, record only physical guidance since it was the most intrusive level of prompt you provided for that dressing step.

How to implement SLP during dressing:

1. Gather all materials needed to complete the dressing process (e.g., shirt, pants, etc.) and have a data sheet, pencil/pen, and stopwatch with you. Have resident sit on bed or chair to complete dressing if needed. Undress resident (pajamas) and put on undergarments.

2. Provide a verbal directive ("It's time to get dressed") and then start stopwatch.

3. Always wait 10 seconds to allow the resident to respond after initial directive or prompt is given before providing another prompt.

4. If resident does not initiate the dressing step, provide at least but no more than 2 less-intrusive prompts (verbal, gestural, or model) for each dressing step prior to providing physical guidance (e.g., "Mary, here is your shirt", "Put your arm in the hole like this", etc).

5. Provide descriptive verbal praise after completion of a dressing step regardless of the amount of assistance required (Do not provide praise when complete assistance is required since we do not want to reinforce dependent behavior).

6. After the last step in the dressing task sequence is completed (shirt and pants are on resident), stop the stopwatch.

Appendix B

Resident Name _____ **Date** _____ **Observer** _____

Materials Needed: Shirt, pants, bed/chair (If resident is unsteady, have them sit on bed/chair to complete steps) *Undergarments should be on resident before beginning data collection.

*****Start stopwatch and say "It's time to get dressed." Allow at least 10 sec for resident to initiate step independently before providing additional prompts. Always provide 2 less-intrusive prompts prior to providing physical guidance. Always provide praise following completion of a step unless complete assistance was required.**

Dressing	**Most Intrusive Level of prompt provided** (circle)	**Was praise provided?**
ADL task sequence **Pants**	I = Complete Independence V= Verbal Prompt G/M=Gestural/Model Prompt PG= Physical guidance CA= Complete assistance	"I like how you tried to put your shirt on by yourself", etc. (circle)
1. Hold pants and open waistband	**I V G/M PG CA**	**Yes No**
2. Insert right leg into right hole of pants	**I V G/M PG CA**	**Yes No**
3. Insert left leg into left hole of pants	**I V G/M PG CA**	**Yes No**
4. Pull pants up from waistband	**I V G/M PG CA**	**Yes No**
Shirt		
5. Hold shirt and locate tag/back of shirt	**I V G/M PG CA**	**Yes No**
6. Insert right arm into right arm hole	**I V G/M PG CA**	**Yes No**
7. Insert left arm into left arm hole	**I V G/M PG CA**	**Yes No**
8. Insert head into opening at the top of shirt	**I V G/M PG CA**	**Yes No**
9. Pull shirt down over chest/stomach	**I V G/M PG CA**	**Yes No**

Total time to complete all steps _____ min _____

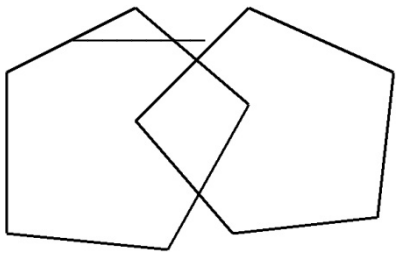
Most intrusive level of assistance needed during grooming (hair brushing) (circle)*****Do not use SLP procedure***** Provide materials needed (comb/brush) and say "It's time to brush your hair." Complete grooming as you normally would. Just record level of assistance resident needed during grooming task.

Independent Verbal prompts G/M prompt Physical guidance Complete Assistance

Appendix C

Mini-Mental State Examination

ORIENTATION	Max Score	Actual Score
1. What is the (year) (season) (date) (day) (month)	(5)	_____
2. Where are we: (state) (city) (facility)?	(3)	_____
3. What (floor) do you live on? What (county)?	(2)	_____
REGISTRATION		
4. Name 3 objects (apple, penny, table): Ask resident to repeat the 3 words after you have said them. Give 1 point for each correct answer.	(3)	_____
ATTENTION AND CALCULATION		
5. Spell "WORLD" backwards: "DLROW" Give 1 point for each correct answer.	(5)	_____
RECALL		
6. Ask for the 3 objects repeated above (apple, penny, table) Give 1 point for each correct answer.	(3)	_____
LANGUAGE		
7. Show 2 objects (pencil and watch); ask for their names.	(2)	_____
8. Repeat the following: "No ifs, ands, or buts." (1)		_____
9. Follow a 3 stage command: "Take a paper in your right hand, fold it in half, and put in on the floor."	(3)	_____
10. Have the patient read and obey the following:		
"CLOSE YOUR EYES"		
	(1)	_____
11. Have the resident write a sentence of his or her choice.	(1)	_____
12. Have the resident copy the following design	(1)	_____
TOTAL SCORE	**(30)**	



Appendix D

1. Did staff member provide the initial verbal directive ("It's time to get dressed")? Yes / No
2. Did staff member provide all materials to complete the dressing task sequence? Yes / No
3. Did the staff member start the stopwatch at the beginning of the dressing session? Yes / No
4. Did the staff member stop the stopwatch at the end of the dressing session? Yes / No

\Dressing	**Most Intrusive Level of prompt provided** (circle)	**Was praise provided?**	**Did staff member provide the prompts correctly?** (2 prompts prior to physical guidance)	**Did staff wait 5 sec following prompt for resident response?**
ADL task sequence **Pants**	I = Complete Independence (4) V= Verbal Prompt (3) G/M=Gestural/Model Prompt (2) PG= Physical guidance (1) CA= Complete assistance (0)	"I like how you tried to put your shirt on by yourself", etc. (circle)		
1. Hold pants and open waistband	**I V G/M PG CA**	**Yes No**	**Yes No**	**Yes No**
2. Insert right leg into right hole of pants	**I V G/M PG CA**	**Yes No**	**Yes No**	**Yes No**
3. Insert left leg into left hole of pants	**I V G/M PG CA**	**Yes No**	**Yes No**	**Yes No**
4. Pull pants up from waistband	**I V G/M PG CA**	**Yes No**	**Yes No**	**Yes No**
Shirt				
5. Hold shirt and locate tag/back of shirt	**I V G/M PG CA**	**Yes No**	**Yes No**	**Yes No**
6. Insert right arm into right arm hole	**I V G/M PG CA**	**Yes No**	**Yes No**	**Yes No**
7. Insert left arm into left arm hole	**I V G/M PG CA**	**Yes No**	**Yes No**	**Yes No**
8. Insert head into opening at the top of shirt	**I V G/M PG CA**	**Yes No**	**Yes No**	**Yes No**
9. Pull shirt down over chest/stomach	**I V G/M PG CA**	**Yes No**	**Yes No**	**Yes No**

Total responses_____/_____correct responses X 100% = _____% correct responses

Appendix E

Resident Name _____ Date _____

For the following questions, circle the response that indicates your feelings.

1. **How satisfied are you with the amount of control you have in completing daily tasks for yourself if you choose?**

Completely Unsatisfied	Unsatisfied	Neutral	Satisfied	Completely Satisfied

2. **How satisfied are you with your independence in completing daily tasks?**

Completely Unsatisfied	Unsatisfied	Neutral	Satisfied	Completely Satisfied

3. **Overall, how satisfied are you with your life?**

Completely Unsatisfied	Unsatisfied	Neutral	Satisfied	Completely Satisfied

Appendix F

1. **Overall, I am satisfied with the SLP procedure.**

   Strongly Disagree Disagree Neutral Agree Strongly Agree

2. **I believe that the SLP procedure has the potential to increase resident quality of life by providing opportunities for them to be more independent.**

   Strongly Disagree Disagree Neutral Agree Strongly Agree

3. **The SLP procedure was easy to implement.**

   Strongly Disagree Disagree Neutral Agree Strongly Agree

4. **The SLP procedure was time efficient.**

   Strongly Disagree Disagree Neutral Agree Strongly Agree

5. **I would be willing to use this procedure in the future.**

   Strongly Disagree Disagree Neutral Agree Strongly Agree

Additional Comments:

November 24, 2010

Dr. Michael Clayton, Principal Investigator
Ms. Carrie Snyder, Co-investigator
Department of Psychology
UNIVERSITY

RE: HSRC PROTOCOL NUMBER: 028-2011
PROTOCOL TITLE: System of Least Prompts to Promote Independence in Activities of Daily Living

Dear Dr. Clayton and Ms. Snyder:

The Human Subjects Research Committee of Youngstown State University has reviewed the above mentioned protocol and determined that it fully meets YSU Human Subjects Research Guidelines. Therefore, I am pleased to inform you that your project has been fully approved.

Any changes in your research activity should be promptly reported to the Human Subjects Research Committee and may not be initiated without HSRC approval except where necessary to eliminate hazard to human subjects. Any unanticipated problems involving risks to subjects should also be promptly reported to the Human Subjects Research Committee.

Sincerely,

Peter J. Kasvinsky
Dean, School of Graduate Studies and Research
Research Compliance Officer

PJK:cc

c: Dr. Karen Giorgetti, Chair
Department of Psychology