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Translating Strong for Life Into the Community Care Program: Lessons Learned

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Abstract

We used a randomized controlled trial to test the implementation of Strong for Life (SFL), a resistance exercise intervention, using 32 home care aides (HCAs) as exercise leaders with their 42 homebound older adult clients enrolled in the Community Care Program, a Medicaid 1915(c) waiver program. Mixed-methods were used to analyze outcomes of program satisfaction rates, training session evaluations, program fidelity, and job descriptive index scores. Results indicate that it is feasible for HCAs to implement SFL safely with clients. Participants viewed SFL as highly satisfactory and HCAs were able to adapt SFL for their clients. HCAs have high job satisfaction, and leading SFL enhances work achievement and pride. Our results show it is possible to train HCAs to implement SFL with their clients in addition to providing usual care services, participation positively affects both care partners, and this is a feasible and practical delivery model to provide exercise for adults receiving home- and community-based services.

Keywords

home- and community-based services; exercise; home care aides; strength training; waiver program

Background

More than 1.45 million older adults and/or persons with disabilities receive home- and community-based services through Medicaid waiver programs in the United States (Ng, Harrington, Musumeci, & Reaves, 2014). This waiver provides long-term care services in the home and community to facilitate aging-in-place. In the State of Illinois, home- and community-based services are offered to older adults with documented need for nursing home services through the Community Care Program. Services include case management,

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adult day services, emergency response systems, and home care aides (HCAs) who assist with self-care, housekeeping, and activities of daily living (ADL). Physical activity (PA) interventions are not included in these services despite the known functional and physical benefits of these interventions (American College of Sports Medicine [ACSM] et al., 2009). Specific to the population of older adults receiving reablement, or restorative home care services from a personal care attendant, exercise can have measurable cost savings, as well as physical health benefits for older adults (Lewin et al., 2014). Reablement services in the United Kingdom and Australia have integrated wellness approaches into the line of services; however, this model has not been commonly adopted in the United States at this point. The Illinois Community Care Program population is characteristically female, minority, with low socioeconomic status, and with advanced age (Ward & Schiller, 2013). Consistent with this demographic profile, this population has multiple risk factors for a sedentary lifestyle, reduced functional ability, and is highly likely to benefit from access to PA programming.

Most evidence-based PA programs targeting older adults are offered in community settings (Park & Chodzko-Zajko, 2014), and thus, homebound older adults are often unable to access these programs due to mobility limitations (Qiu et al., 2010). Therefore, a significant need exists to investigate alternative strategies to engage homebound older adults in PA. One potential mechanism to reach this underserved population would be to embed PA programming within existing HCA services. HCAs are in a unique position to access and assist this population of homebound older adults with PA because HCAs visit their clients regularly and have established relationships on which to build. Therefore, the potential exists to expand the job role of these important paraprofessionals to include the provision of PA programming for their clients. Health care policy changes have contributed to HCA reports of intensified work responsibilities (Cloutier et al., 2008). Increased daily workload is theorized to affect job satisfaction by increasing job burden, decreasing time in relational aspects with clients, and contributing to job stress and burnout (Cloutier et al., 2008; Piercy, 2000). Thus, testing the feasibility of adding additional HCA responsibilities without increasing the overall time for providing usual care tasks is of vital importance to determine whether this delivery model of PA will be acceptable and practical in the home- and community-based services setting.

Aging is associated with a decline in multiple systems that contribute to the development of functional impairments. Specifically, aging is associated with a loss of muscle mass and strength which contribute to functional deficits and the loss of independence in ADLs (Reid, 2008; Rollan, 2008). However, it is well established that resistance exercise can counteract age-related changes in muscle leading to improvements in strength, reduction of functional limitations, and preservation of function (ACSM et al., 2009; Seguin and Nelson, 2003).

Strong for Life (SFL) is an evidence-based progressive resistance exercise program originally designed for frail and/or functionally impaired older adults (Jette et al., 1996). Although SFL has demonstrated benefits in the broader community (Jette et al., 1999 and Etkin, et al., 2006), it has not been tested with homebound persons in the Community Care Program using HCAs as exercise trainers. The SFL program was selected as the intervention for this study for several reasons. First, the DVD format that SFL uses is ideal for reaching homebound older adults. Second, previous research has shown that SFL participants had

significant improvements in muscle strength, gait, and functioning, with high adherence and participation rates and no adverse events (Jette et al., 1996). Third, SFL focuses on major muscle groups at a moderate exercise intensity level which has been recommended to facilitate optimal strength improvements for older adults (ACSM et al., 2009); however, the safety and effectiveness of SFL has not yet been tested with this target population. Thus, this is the first known study to test the implementation of SFL with Community Care Program clients using HCAs as exercise trainers for clients to determine whether this mode of PA delivery is feasible for this population.

Method

Design

We used a randomized control trial with pre- and posttest design. Randomization occurred at the level of the HCA by creating randomization sequences determined by blocking the number of client hours in five categories (4–10, 11–15, 16–20, 21–25, and 26 or greater hours) such that 50% of client subjects and their respective HCA in each category were assigned to the control group. We used a Matlab computer program that guaranteed a 50/50 split of HCA–client dyads or triads in each cell.

Setting, Participants, and Recruitment

We recruited HCAs and clients through the Cook County office of Community Care System, Incorporated (CCSI). CCSI is a home care vendor that has a contract to participate in the Community Care Program statewide. All study methods, measures, and consent procedures were reviewed and approved by the University of Illinois Institutional Review Board 2013–1152.

We first recruited from the approximate 125 HCAs employed in the Cook County office through direct mailings and presentations at staff in-services. HCAs participated in a telephone screen to determine eligibility. Once a HCA was deemed eligible, all clients on the eligible HCA's caseload were mailed study information. Research staff telephoned clients 2 weeks later to provide further study information. Interested clients participated in a telephone screening to determine their eligibility. Research staff met clients meeting telephone inclusion criteria in the client's home to sign informed consent and participate in baseline measurement testing. Research staff obtained informed consent from HCAs at the training session.

We initially enrolled and randomized HCAs ($n = 34$) for training: 15 HCAs in the control group and 19 HCAs in the intervention group. Post randomization, two HCAs in the intervention group did not show up for training and were subsequently not enrolled in the study. Group allocation became uneven between the randomization and the beginning of the intervention, as five clients became ineligible due to no longer receiving Community Care Program services or changes in their HCA. Table 1 shows baseline HCA characteristics. Clients ($n = 64$) were screened for eligibility. Of those, 52 were determined eligible and 42 enrolled in the study. Table 2 shows baseline client characteristics. There were no significant differences between intervention and control group clients or HCAs at baseline.

Inclusion Criteria

Eligible HCAs were employed by the CCSI Cook County office, had at least one client whom they visited 2 or more days per week, were English speaking, and were willing to participate in study procedures.

Clients of enrolled HCAs were eligible if they were primary English speaking, not currently participating in regular exercise (defined as more than 30 min, 3 or more days per week), had no other health problems that contra-indicated participation in PA as determined by the Exercise and Screening for You (EASY; Resnick, 2008), greater than 65 years of age, and willing to participate in study procedures. If a client needed physician consent based on the EASY screen results, a consent form was faxed to the primary care physician identified by the client. Clients and HCAs were excluded if they did not meet inclusion criteria or if clients' physicians did not provide consent.

Training Procedures of HCAs

All participating HCAs ($n = 32$) attended a half-day training. Those randomized to the intervention group ($n = 17$) participated in SFL training led by a physical therapist, while HCAs randomized to the control group ($n = 15$) participated in back safety training. Training followed the SFL manual developed by the Boston University Roybal Center. Intervention group HCAs received the SFL manual, reviewed the SFL core components and benefits of exercise, watched the SFL DVD, and participated in discussions regarding techniques and modifications for each exercise. Competency was determined by having HCAs lead SFL with peers, problem-solving challenging situations via role playing, and answering questions regarding safe SFL modifications. The trainer taught HCAs to use the Borg Rating of Perceived Exertion (Borg, 1998) to monitor client exercise intensity to progress the level of Theraband used throughout the course of the program. We provided HCAs and clients with a telephone hotline to contact research staff with any concerns. All HCAs were compensated US\$80 for participating in the half-day training, and intervention HCAs were paid an additional US\$40 for leading SFL with their client throughout the 12-week intervention. All HCAs were instructed to continue performing usual care with their clients. This project was supported by National Institute on Aging Grant 2P30AG022849-06.

Intervention

SFL consists of a 35-min DVD routine that includes a warm up, 11 upper and lower extremity exercises using Therabands for resistance, and a cool down. Exercises are performed both seated and standing and exercise modifications are shown. HCAs led SFL with their clients two times per week for the first 2 weeks with clients completing the third weekly session independently. During Weeks 3 to 12 of the program, HCAs reminded their clients to complete SFL at every usual care visit and progressively increase the difficulty of Theraband resistance bands used over the course of the 12-week program. All clients were provided with the SFL DVD, a user's manual, Theraband tubing including three levels of resistance and attachment handles to assist with grip, and instructions to perform the program three times per week for 12 weeks. Clients were compensated US\$10 for participation in baseline and follow-up measurements.

Measures

The primary outcomes of this feasibility study were client and HCA program satisfaction rates, HCA SFL training evaluation information, and SFL fidelity rates. Satisfaction rates were calculated using a 10-point Likert-type scale to measure overall program satisfaction. HCAs rated SFL training on a 5-point scale (from “poor” to “excellent”). Fidelity rates were calculated as a percentage of the exercises (out of 11) completed correctly during an in-home fidelity check with qualitative analysis regarding SFL delivery. A secondary outcome of this study was HCA job satisfaction as measured on the job descriptive index (JDI). One of the most frequently used job satisfaction measures, the JDI has high test–retest reliability (0.62–0.79) and internal consistency (0.81; van Saane, Sluiter, Verbeek, & Frings-Dresen, 2003 and Kinicki, et al., 2002). Furthermore, the measure has been used with similar populations of nursing staff working with older adults (Kiyak, Namazi, & Kahana, 1997). We assessed job satisfaction with the 18-item Job in General and Work on Present Job scales from the JDI. Scores of 27 are indicative of a neutral point in job satisfaction (Balzer, et al., 1990) and the maximum scores on each scale is 54.

Data Collection

Research assistants blinded to group assignment conducted measurement at baseline and 12 weeks. At each time point, HCAs filled out the JDI. Research assistants unblinded to group assignment and trained by the study principal investigator (PI) performed an in-home fidelity check observing one SFL session during Weeks 3 and 4. Qualitative assessment using participant observation was used to note SFL intervention receipt, including the quality of exercise participation and client comprehension, client perception of program difficulty, safety, and use of equipment following a fidelity checklist. Research assistants also took field notes with description of the interaction of the client and the HCA during the exercise session. Research assistants noted and corrected any fidelity issues during the home visit.

Statistical Analysis

The primary author analyzed answers to open-ended program evaluation questions through conventional content analysis using a spiral approach. Answers were initially read to develop an initial code list. Responses were re-read, and codes were applied to each answer. Codes were analyzed for frequency to identify meaningful patterns. We used qualitative and quantitative data in a sequential explanatory design to explore congruence between qualitative and quantitative findings. We used analysis of variance (ANOVA) to assess baseline group mean differences between control and intervention groups, and on the JDI at baseline and at posttest.

Results

Study Attrition

Figure 1 shows the flow of HCAs and clients through the study. We had no loss to follow-up of HCAs. Of the initial 42 clients, 35 (83%) remained at the completion of the 12-week study. Among those in the control group, 14 (78%) completed the study. Among those in the intervention group, 21 (88%) completed the study.

SFL Training Evaluation—HCAs viewed SFL training positively. One hundred percent of HCAs rated overall SFL training, quality and usefulness of training and training materials, and the convenience of a Saturday morning session as “excellent” or “good.” Ninety-three percent of HCAs felt the SFL trainer had “excellent” or “good” ability to communicate SFL content. At follow-up, 100% of HCAs reported that SFL training prepared them to lead their clients appropriately.

SFL Fidelity

We conducted in-home fidelity checks on clients ($n = 19$ of 24) in the intervention group. Reasons for not conducting a fidelity check were $n = 1$ (deceased), $n = 2$ (did not return phone calls), and $n = 2$ (HCAs did not attend training). Research staff found HCAs were involved in administering SFL by performing SFL exercises simultaneously with their client, providing encouragement, and supplying clarifications and explanations of exercises. Reasons for not performing SFL with the client were that the client preferred to do SFL alone or that the client was competent in the program and the HCA observed from a distance. More than half of clients ($n = 11$) required some assistance from their HCA to correctly perform SFL ranging from total assistance to move limbs to minor verbal cues to clarify exercise technique.

High implementation fidelity was observed. Each exercise was coded dichotomously (yes/no) based on whether the client performed the exercise. All clients completed eight of the 11 exercises with one client unable to perform heel raises and one client unable to perform shoulder abduction. Four clients omitted the “get up and go” exercise due to reported difficulty. All clients reduced the range of motion through which exercises were completed or performing SFL while sitting to accommodate physical limitations. Overall, clients were able to perform SFL safely. Only five clients had identified safety issues with all performing SFL on rolling desk chairs or unlocked wheelchairs. Research assistants instructed clients and HCAs to use immovable chairs and all successfully made the modification.

Clients reported mixed perceptions of SFL difficulty. Many clients reported that SFL provided an appropriate level of challenge. Clients stated that SFL was

“A challenge and I enjoy the workout” and “reasonably hard, but not impossible.”

However, other clients noted difficulty in performing SFL. Clients reported,

“30 minutes of exercise is too long for someone my age” and “I do all the exercises sitting because of my balance.”

Clients used varying levels of resistance with one client performing SFL without Theraband, seven clients using yellow (thin) Theraband, five clients using red (medium), one client using green (heavy), and five clients varying the level of Theraband depending on the specific exercise.

Program Evaluation

Research staff completed program evaluations on intervention HCAs ($n = 17$) and clients ($n = 15$ out of 24) 1 week following the completion of the intervention. Questions evaluated program satisfaction, benefits, implementation, and suggestions. We did not complete program evaluations for the clients who did not receive the intervention, as well as for four clients who deferred due to personal reasons.

Overall, both clients and HCAs were highly satisfied with SFL. Mean ratings were 9.1 for HCAs (range: 6–10) and 8.3 for clients (range: 2–10). Qualitatively, HCAs identified that SFL benefitted their clients by enhancing mobility, increasing strength, and providing motivation to be more active. One HCA reported,

I'm happy to say that this program made a big difference in their life. It made them feel very good & my clients looked forward to doing their exercises!

Clients reported physical benefits to participation, and 73% noted the DVD was the most successful SFL component due to its motivational effects. A client noted,

The CD (DVD) showed how active people are and what we can accomplish if we work at it on a day to day basis.

Roughly half of HCAs identified areas needed for improvement. Those improvements focused on two themes: reducing the challenge of certain exercises or adding more variety by including additional DVDs within the overall program. Clients (53%) identified needed areas of SFL improvement including the need to present alternative modifications for those with limited mobility and a slower pace of the DVD program instruction.

Only two HCAs reported difficulty leading SFL with their clients due to one client who needed increased motivation and one client's blindness that required greater HCA physical assistance to guide client movement. Only one client reported difficulty performing SFL in the home due to not owning a chair. The HCA provided modified by having the client complete SFL while sitting on a cooler.

All HCAs and all clients recommended that SFL should be implemented with all Community Care Program clients. Participants stated,

If you're just sitting there, this (SFL DVD) gives you the ability to do it when there's no one around. Especially for people like me who don't drive and can't get out.

I was a couch potato. It (SFL program) got me off of the couch and moving.

The primary reason clients stated SFL should continue is due to the importance of exercise:

I think it (SFL exercise) helps the body be more flexible and (my) disposition is better.

When you exercise, you can notice a definite difference in the flexibility and mobility. Your hips and knees are looser and the freedom of motion is really elevated.

HCA Job Satisfaction

At baseline (Table 3), baseline intervention group HCAs had significantly lower satisfaction with work on the present job compared with HCAs in the control group. Post intervention, this statistical difference was no longer apparent. However, results overall indicate HCAs in both group assignments had high levels of job satisfaction as all scores are well above 27. Qualitatively, we identified two themes: achievement and recognition, suggesting that HCA job satisfaction was positively influenced by the administration of SFL. Several HCAs stated,

(SFL) gave us something to do (together).

I am so proud that my client is able to walk for longer periods of time (after SFL).

(SFL) made her (the client) better—it made her legs stronger.

Discussion

The goal of this study was to determine the feasibility of training HCAs to lead SFL with their Community Care Program clients. Results support that HCAs can be trained to offer a 12-week resistance training intervention with clients and can implement it successfully and safely. Our findings are notable for several reasons. First, our program was able to engage homebound older adults in a PA program without any reports of adverse events. Second, HCA job satisfaction did not appear to be adversely affected by the increased workload of leading SFL. Although there was no significant quantitative change in job satisfaction, our qualitative findings reveal that HCAs had a sense of pride when leading SFL with their clients that contributed to feelings of achievement when they recognized their client's functional improvements. Time was never identified as a barrier to completing SFL indicating that HCAs can deliver SFL within the time constraints of hours allotted for usual care tasks. Third, acceptability of the intervention was high. Both HCAs and clients had positive reactions to the intervention and voiced the opinion that SFL should continue. Finally, HCAs were able to adapt the SFL intervention appropriately given clients' individual physical or environmental challenges.

One other study, to our knowledge, has examined the HCA delivery model for PA interventions (Park & Chodzko-Zajko, 2014). The authors implemented the Healthy Moves for Aging Well program with 13 Community Care Program clients and six HCAs in Southern Illinois. They found high program satisfaction rates with implementation of the three-exercise program, but did not test effects on HCA job satisfaction. Thus, our study is unique in utilizing a DVD-based format that allowed clients to participate on days their HCA does not visit, the use of resistance bands to dose exercise intensity to create strength improvements, and the quantification of HCA job satisfaction using an established and validated questionnaire.

Our results are consistent with previous studies that have shown DVD exercise interventions are capable of reaching populations typically not able to access community-based exercise programs (McAuley et al., 2013). Our study was novel in utilizing HCAs to individually modify the DVD program for their client's specific mobility and balance impairments, as

well as home environmental constraints. We suspect that our low attrition rates are, in part, due to the motivational reinforcement of the HCA.

Our finding that HCAs have high levels of job satisfaction is congruent with findings from the National Home Health Aide Survey (Bercovitz et al., 2007). We believe that our results support that the additional work responsibilities of administering a PA program with clients do not adversely affect job satisfaction, thereby endorsing the acceptability of this intervention model. Our qualitative findings provide a more complete understanding of the high program satisfaction reported by HCAs. High levels of program satisfaction appear to be driven by HCAs' desire to improve their clients' activity levels, energy, and mobility. We suspect that participation in SFL provides clients with improved functioning that is noted by the HCA, reinforcing the sense of pride in work responsibilities and contributing to increased job satisfaction.

We must note, however, that the mean hourly wage for HCAs is US\$10.88 per hour (Bercovitz et al., 2011). We compensated participants at a rate of US\$20.00 per hour, but we do not believe that this financial incentive unduly influenced enrollment as only approximately half of eligible HCAs expressed interest in our study. However, the viability of this intervention under real-world conditions may be influenced if additional pay is not provided for HCAs providing additional PA services to their clients.

Lack of social support, an exercise partner, and exercise supervision have been reported barriers to exercise participation for older adults (Allen & Morey, 2010; Picorelli et al., 2014). We think that social support, encouragement, and supervision provided by HCAs allowed for successful implementation of SFL within this population of older adults. Furthermore, we hypothesize that the social support provided by HCAs greatly contributed to the implementation success. Based on our fidelity check findings, the majority of HCAs provided motivation and emotional support, supplied tangible instrumental help in modifying the program, and gave instructions and advice on the importance of exercise. In sum, our qualitative and quantitative findings show that HCAs are capable of expanding their job responsibilities beyond performing homemaker tasks to include supportive exercise leader.

Several limitations of the study deserve attention. First, this study is based on a small sample that received services from a single provider. Therefore, the findings are not representative of the entire Community Care Program population, specifically with respect to rural populations. We did not assess client cognition. Varying levels of cognition may have affected both baseline physical functioning, as well as the ability to independently remember to complete the exercise program without input from the HCA. We also have limited information regarding adherence to the three times per week recommendation for participation. This limits our ability to understand the exercise dosage clients received, as well as our understanding of the frequency with which the program was implemented. The short duration of the intervention limits our understanding of the ability of HCAs to promote long-term exercise maintenance with their clients. Qualitative data analysis was completed by a single author. Finally, we did not collect information regarding changes in the

Theraband color use which limits our ability to comment on the ability of HCAs to progress exercise intensity with their clients.

Despite these limitations, this study has important implications for both future research, as well as policy makers. For researchers, this study points to an implementation mechanism that requires further investigation on a larger scale. For policy makers, this research suggests an effective means of offering PA programming to an underserved population within an existing delivery framework. We purposely used broad inclusion criteria to enroll clients representing the spectrum of levels of function among clients receiving HCA services. We did this to demonstrate feasibility of the program across levels of physical and cognitive functioning. Our broad inclusion criteria enabled us to demonstrate the feasibility of implementing SFL with a heterogeneous Community Care Program population.

In sum, the present work indicates that SFL can be successfully implemented within the Community Care Program by training HCAs to lead the program. HCAs are capable of being trained to implement SFL safely with their clients, and fidelity site visits are important in reinforcing safe ways to conduct the program in the home. This feasibility pilot demonstrates that SFL has the potential to be incorporated in existing care services within the Community Care Program to provide access to badly needed structured PA for clients. Further research should involve testing SFL with a more representative sample of clients statewide.

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Biographies

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Daniel M. Corcos is a professor in the Department of Physical Therapy and Human Movement Sciences at Northwestern University—Feinberg School of Medicine. His research focuses on movement neuroscience and exercise in neurodegenerative disease. He was elected to the National Academy of Kinesiology and was chair of the Musculoskeletal and Rehabilitation Sciences study section (2004–2006) and the Musculoskeletal Function and Speech Rehabilitation study section (2011–2013).

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Figure 1.

Clinical flow diagram.

Note. HCA = home care aides; SFL = Strong for Life.

Table 1

Home Care Aide Participant Baseline Demographics by Group.

Sociodemographic characteristics	Total (<i>N</i> = 32)	Control group (<i>n</i> = 15)	Intervention group (<i>n</i> = 17)	<i>p</i> value
% Female	100	100	100	NS
Age in years, <i>M</i> (<i>SD</i>)	48.7 (11.8)	47.3 (11.7)	49.9 (12.1)	NS
Race (%)				NS
Black	72	67	76	
White	6	0	12	
Hispanic	22	33	12	
Level of education (%)				NS
High school or less	47	33	64	
Some college	44	61	27	
College and above	9	6	9	

Note. NS = non-significant ($p > .05$).

Table 2

Client Participant Baseline Demographics by Group.

Sociodemographic characteristics	Total (<i>N</i> = 42)	Control group (<i>n</i> = 18)	Intervention group (<i>n</i> = 24)	<i>p</i> value
% Female	83	83	83	NS
Age in years, <i>M</i> (<i>SD</i>)	74.8 (8.8)	75.6 (9.9)	74.1 (8.1)	NS
Weekly care hours, <i>M</i> (<i>SD</i>)	13.5 (6.2)	12.0 (6.0)	14.2 (6.2)	NS
Race (%)				NS
Black	50	50	50	
White	43	38	46	
Hispanic	5	6	4	
Other	2	6	0	
Level of education (%)				NS
Some grade school	2	0	4	
Grade school	17	22	13	
Some high school	21	11	29	
High school	26	28	25	
Some college	26	28	25	
College	7	11	4	

Note. NS = non-significant ($p > .05$).

Table 3

Home Care Aide Job Descriptive Index Scores at Baseline Pretest and 12-Week Posttest.

Scale	Baseline pretest		12-week posttest	
	Control (<i>n</i> = 14) (<i>M</i> ± <i>SD</i>)	INT (<i>n</i> = 14) (<i>M</i> ± <i>SD</i>)	Control (<i>n</i> = 17) (<i>M</i> ± <i>SD</i>)	INT (<i>n</i> = 17) (<i>M</i> ± <i>SD</i>)
Job in General	46.5 (7.2)	44.6 (9.3)	46.6 (6.4)	44.2 (11.5)
Work on Present Job	44.6 (8.0) *	42.6 (6.6)	39.5 (4.6)	41.0 (9.4)

Note. INT = intervention group.

* $p < .05$; control pretest score versus intervention pretest score.