



January 2023

The Impact of a Two-Visit Occupational Therapy Home Modification Model on Low-Income Older Adults

Anna Y. Grasso

Salus University - USA, agrasso@salus.edu

AnnMarie Murphy

Temple University - USA, annmarie.murphy@temple.edu

Cynthia Abbott-Gaffney

Temple University - USA, Cynthia.Abbott-Gaffney@temple.edu

Follow this and additional works at: <https://scholarworks.wmich.edu/ojot>



Part of the Occupational Therapy Commons

Recommended Citation

Grasso, A. Y., Murphy, A., & Abbott-Gaffney, C. (2023). The Impact of a Two-Visit Occupational Therapy Home Modification Model on Low-Income Older Adults. *The Open Journal of Occupational Therapy*, 11(1), 1-9. <https://doi.org/10.15453/2168-6408.2047>

This document has been accepted for inclusion in The Open Journal of Occupational Therapy by the editors. Free, open access is provided by ScholarWorks at WMU. For more information, please contact wmu-scholarworks@wmich.edu.

The Impact of a Two-Visit Occupational Therapy Home Modification Model on Low-Income Older Adults

Abstract

Background: Various studies support the benefit of occupational therapist-led home modification to support successful aging in place for older adults. However, methodological differences limit generalizability. This study aimed to determine the impact of a replicable two-visit occupational therapy home modification program on occupational performance of low-income, community-dwelling older adults.

Method: The researcher used a quasi-experimental one group pretest-posttest design. The participants were low-income homeowners, age 55 years and older, with decreased performance and/or satisfaction in one or more ADLs and IADLs as determined by the COPM. An occupational therapist provided the participants with a home safety assessment using the Rebuilding Together Safe at Home Checklist, along with a follow-up visit to deliver equipment and education.

Results: Data analysis using paired t-tests revealed statistically significant increases in COPM performance and satisfaction ratings from pretest to posttest for the nine participants. The mean average total costs for home modification were \$10,396.65 compared to average annual health care costs from \$22,763 to \$154,478.

Conclusion: A two-visit model of occupational therapist-led home modifications benefits low-income older adults. This study provides support for these cost-effective services in support of AOTA's *Vision 2025*, to maximize health, well-being, and quality of life for all people, populations, and communities through effective solutions that facilitate participation in everyday living.

Keywords

aging in place, environmental adaptation, occupational performance

Cover Page Footnote

Acknowledgments: Support for this project was provided by the Salus and Temple University Occupational Therapy Programs. The partnership between Salus University and Rebuilding Together Philadelphia was instrumental in the study design and implementation. Thanks to Salus University's Greta Bunin, PhD, for statistical analysis. This project was presented at the American Occupational Therapy Association annual conference in April, 2022, as a poster session.

Credentials Display

Anna Y. Grasso, OTD, MS, OTR/L, CAPS, ECHM; AnnMarie Murphy, OTD, OTR/L, CIMI-2; Cynthia Abbott-Gaffney, OTD, MA, OTR/L

Copyright transfer agreements are not obtained by The Open Journal of Occupational Therapy (OJOT). Reprint permission for this Applied Research should be obtained from the corresponding author(s). Click here to view our open access statement regarding user rights and distribution of this Applied Research.

DOI: 10.15453/2168-6408.2047

In 2015, approximately 47.8 million people (14.9%) in North America and 617.1 million people (9%) globally were 65 years of age and older (Roberts et al., 2018; United States Census Bureau, 2017). This demographic is rapidly growing because of increased longevity. This demographic is estimated to grow to 21.4% of the North American population and 17% of the world population by 2050 (Roberts et al., 2018). Despite the average life expectancy in the United States being 78.5 years of age, the World Health Organization estimates healthy life expectancy, or the average time during which older adults are able to function independently, is 66.1 years (World Health Organization, 2020). The 2016 American Community Survey performed by the United States Census Bureau found that for people 65 years of age and older, the most common functional limitations were in walking or climbing stairs, hearing, performing self-care, and living independently, such as running errands (Roberts et al., 2018).

As people age, they tend to lose independence in complex instrumental activities of daily living (IADLs), such as meal preparation, house cleaning, and laundry, first, followed by the loss of activities of daily living (ADLs), such as bathing, dressing, and functional mobility. Dependence in these areas has been linked to increased morbidity and mortality (American Occupational Therapy Association [AOTA], 2020; Millán-Calenti et al., 2010). Older adults often recognize barriers in their environment that threaten their health and safety, but they commonly lack the financial resources to address these concerns (Brim et al., 2021; Lam et al., 2021).

Occupational therapists play a valuable role in examining the fit between a person and their environment. Occupational therapists can implement interventions, environmental modifications, and supports that help to improve or maintain performance. Current research shows strong support for home modifications that benefit older adults' functional performance, subjective aspects of daily living, and quality of life. The literature on this topic, however, has diverse methodological approaches, including varying assessment methods, intervention lengths, targeted populations, and intervention goals. All of these factors impact generalizability to design and implementation of evidence-based programs. There is also a paucity of research specifically examining the impact of home modification on low-income homeowners.

Literature Review

Occupational therapists who perform home modification evaluations and interventions typically use a holistic, client-centered approach that considers various personal and environmental factors that may impact the client. These factors most often include physical barriers and the availability of social and financial resources (Stark et al., 2015). The Canadian Model of Occupational Performance and Engagement (CMOP-E) provides a theoretical lens through which occupational therapists can examine the fit between the person, their occupations, and their environment to understand the individual's meaningful participation or engagement (McColl, 2015). Environmental adaptation is one intervention supported by the CMOP-E and the 15-year-long partnership between AOTA and Rebuilding Together (AOTA, 2021).

Multiple studies of client-centered home modifications have shown significant improvements in functional independence and satisfaction with performance of ADLs and IADLs by older adult participants wishing to age in place (Fänge & Iwarsson, 2005; Lau et al., 2018; Petersson et al., 2008; Somerville et al., 2016; Stark et al., 2009; Stark et al., 2018). When homeowners feel included in the decision-making process, home modifications are often perceived positively as a way to decrease the fear of falling and dependence on caregivers and increase safety, security, comfort, confidence, and control

(Gitlin et al., 2006; Tanner et al., 2008). In addition, occupational therapists can provide client-centered education and compensatory and adaptive strategies for ADLs and IADLs in the client's natural environment (AOTA, 2020). A study by Petersson et al. (2009) showed that participants experienced significantly less difficulty in everyday life tasks up to 6 months after intervention, demonstrating the benefits of home modification over time.

Home modifications can potentially decrease caregiving needs and consequential costs spent on formal caregiving services for people with functional limitations living in the community. The Genworth Cost of Care Study calculated the national median yearly cost of a health aide in 2020 to be approximately \$55,000, a private one bedroom in assisted living to be \$51,600, a semi-private room in a nursing home to be \$93,000, and a private room in a nursing home to be \$105,000. These costs are projected to increase by 34%–36% by 2030 (Genworth Financial Inc., 2021). Multiple studies have demonstrated that environmental modifications and adaptations improved or maintained function for participants, thereby decreasing caregiving needs and consequent costs (Goodacre et al., 2008; Mann et al., 1999; Sheffield et al., 2013).

Studies on home modification commonly target older adults; however, one of the largest barriers to modifications, the homeowners' financial status, is rarely explicitly considered, with a few notable exceptions. Szanton et al. (2011) examined the impact of the community aging in place, advancing better living for elders (CAPABLE) intervention. The intervention condition provided up to six occupational therapy visits, up to four nursing visits, and handyman services to low-income, disabled, and primarily African American older adults. Results showed improvement in ADLs and IADLs performance, quality of life, and falls efficacy, as well as decreased symptoms of depression (Szanton et al., 2016; Waldersen et al., 2017). Another study of primarily low-income older adults found that participants reported significantly less fear of falling, fewer home hazards, and improved health-related quality of life following home modification intervention by an occupational therapist that included an average of four visits totaling an average of nine hr (Sheffield et al., 2013). Similarly, Stark (2004) examined the impact of an occupational therapy home modification intervention on low-income older adults and found statistically significant increases in both performance and satisfaction scores on the Canadian Occupational Performance Measure (COPM) assessment from pre to post intervention. For this study, occupational therapists were involved in the assessment and intervention plans, and the number of follow-up visits varied on an "as needed" basis (Stark, 2004, p. 35).

Through the lens of the CMOP-E, occupational therapists can address mismatches between older adults and their home environments to positively impact functional performance and engagement. Environmental modifications have the potential to decrease formal, paid caregiving and institutionalization of older adults and improve psychosocial factors, such as confidence and satisfaction with performance. Although a few intervention studies have shown the benefits of home modifications on low-income older adults, methodological differences make replication and generalizability difficult.

Purpose

This research aimed to answer the following question: Does a consultative, two-visit occupational therapy home modification model improve measures of self-reported occupational performance for low-income, community-dwelling older adults? The study sought to provide evidence-based assessment strategies to occupational therapists who perform home modification recommendations for this population. The primary hypothesis was that a two-visit consultative occupational therapy home modification program, including a client-centered assessment and recommendations, would improve the

self-perceived occupational performance of the studied population. In addition, it was hypothesized that the actual cost of the home modifications allowing someone to age in place would be less than the estimated cost of paid caregiving or institutional care for the homeowner.

Method

Study Design

For this study, a quasi-experimental one-group pretest-posttest design was used to examine the impact of a two-visit consultative occupational therapy model of home modification on the occupational performance of low-income, community-dwelling older adults.

Participants

Individuals who met the eligibility criteria for receiving services from Rebuilding Together Philadelphia (RTP) included participants living in an owner-occupied home and meeting the income requirements of the organization. In 2020 and 2021, applicants for the RTP Block Build program were required to meet the low-income categorization for Philadelphia County, or 80% of area median income, as outlined by the United States Department of Housing and Urban Development: Office of Policy Research and Development (n.d.). Applicants for the RTP Middle Neighborhoods Initiative were required to demonstrate income of up to 100% of area median income. RTP described the Middle Neighborhoods Initiative as “those that are neither in crisis nor booming but are critical to a thriving Philadelphia” (Rebuilding Together Philadelphia, n.d.).

The majority of homeowners referred for occupational therapy services through RTP are aged 55 years or older, so this age group was considered for the study. Participants who reported decreased performance and/or decreased satisfaction with performance in one or more ADLs or IADLs, as determined during the pretest administration of the COPM with an item score of less than 10, were eligible. Participants were excluded if they reported dependence in one or more ADLs or could not consent or answer interview questions independently. Family members and/or caregivers were, at times, consulted to determine participant eligibility as appropriate. In addition, participants who did not speak English were excluded because of infrequent availability of a formal interpreter.

Instruments

The two main instruments used for data collection in this study were the Rebuilding Together Safe at Home Checklist and the COPM. The Rebuilding Together Safe at Home Checklist divides the home into 12 categories (exterior entrances and exits; interior doors, stairs, and halls; bathroom; kitchen; living, dining, and bedroom; laundry; basement; telephone and door; storage space; windows; electric outlets and controls; heat, light, ventilation, smoke, carbon monoxide, and water temperature control) with a checklist of common concerns and barriers to functional performance. The document then includes a checklist of common recommendations for issues in each category with space for comments.

The approximate cost of home modifications (materials and labor) and the cost of in-kind services provided by the researcher were calculated based on information from RTP staff and compared to estimated costs for various paid caregiving services using Genworth’s Cost of Care Survey tool (Genworth Financial Inc., 2021).

Procedures

Before any data collection, the researcher obtained approval from Temple University’s International Review Board. During the first visit, lasting approximately 60 min, the primary researcher interviewed each participant to gather demographic information along with reported functional challenges in the home. The Rebuilding Together Safe at Home Checklist was used at this visit to collect data on

reported and/or observed barriers to functional performance or safety in the home (determined based on the participant interview, environmental observations, and observation of the homeowner's performance). Client factors and performance patterns of the homeowner were considered, along with contextual factors, including the presence of other residents in the home when determining recommendations (AOTA, 2020). All recommendations were discussed, and those agreed on by the homeowner were conveyed to the RTP staff for final approval. Before concluding the first visit, each participant was asked to identify priorities for common ADLs and IADLs tasks at home. They were then asked to quantify their self-perceived performance of these occupations and their satisfaction with their performance on the COPM's 1–10 scale.

A second home visit, lasting approximately 45 min, was performed by the researcher following approval of recommendations by the RTP staff, in all cases before contractor work completion. The researcher delivered and set up approved and portable items requiring basic or no installation, such as shower stools and chairs and all-purpose stools, raised toilet seats and non-slip shower tape and mats, rug gripper tape, and night and/or motion lights. The homeowners were educated on tools, such as reachers and step stools, on the adaptive equipment provided, and on general strategies for improving safety and independence in the home. Handouts were provided on various topics depending on need, including energy conservation and fall prevention strategies, decluttering tips, lighting considerations, sleep hygiene, and community resources for further home modification services.

Two weeks after completion of all recommended contractor work, averaging 22.5 weeks from the initial visit, the COPM was administered a second time as a posttest over the phone. During this call, approximately 15 min were spent with each participant as they again quantified their self-perceived occupational performance on the ADLs and IADLs priorities identified during the pretest, as well as their satisfaction with their performance on the COPM's 1–10 scale. Following completion of all work, the cost of services provided by RTP, including the occupational therapist-recommended modifications, were quantified for each participant and compared to the Genworth Cost of Care Survey tool (Genworth Financial Inc., 2021). A summary of the intervention process can be found in Figure 1.

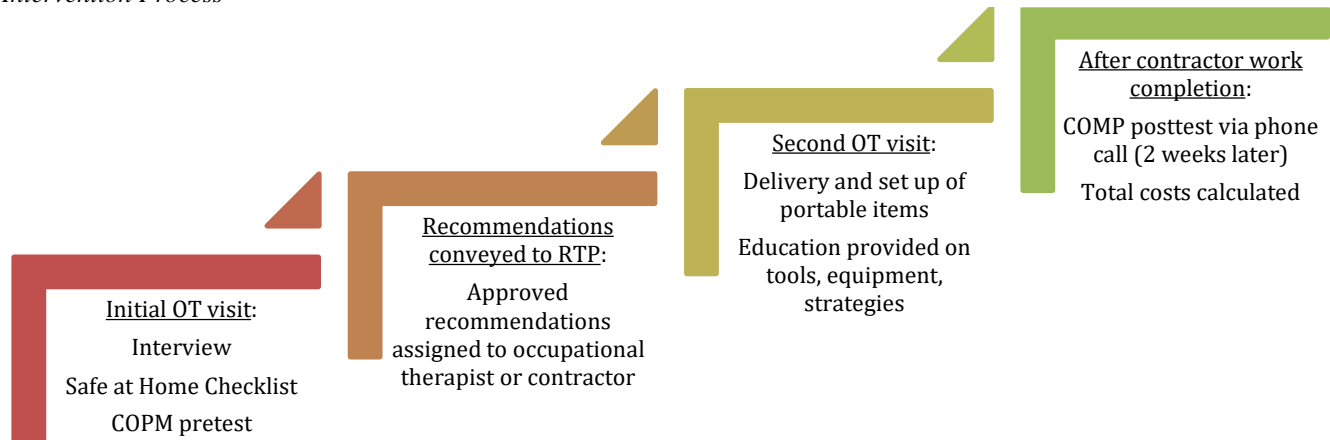
Data Analysis

A paired t-test was used to compare the pre and posttest data from the COPM, and descriptive data from the COPM were included to help determine the direction of difference. The mean was calculated for data, including the COPM scores, the participants' ages, and time from the initial visit to the posttest. The recommendations made by the researcher were counted and categorized for each participant and then percentages were calculated for recommended solutions made compared to recommendations accepted by RTP. The percentage of approved solutions implemented by the contractor was also compared to that of the researcher. The types of occupational priorities identified by the participants were categorized based on the *Occupational Therapy Practice Framework* (AOTA, 2020).

Results

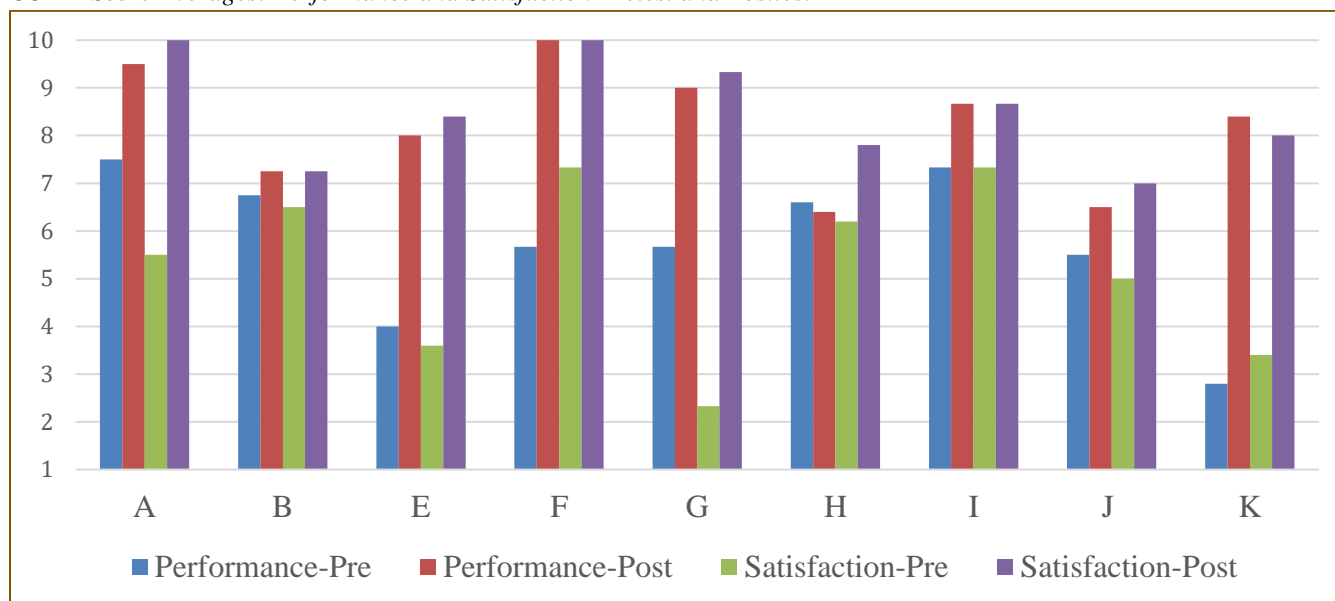
Nine homeowners (N = 9) met the inclusion criteria and provided informed consent during the study period from August 2020 through September 2021. Of these participants, all were female, seven were African American, and two were Caucasian. The age of the participants ranged from 55–88 years (mean 69.78 years). Seven of the participants were enrolled in the Block Build program, and two of the participants were in the Middle Neighborhoods Initiative.

Figure 1
Intervention Process



During the first visit, modification and equipment recommendations were made by the researcher and confirmed by the homeowner. The mean number of recommendations made per home was 19 (ranging from 11 to 25). In total, 171 recommendations were made for modifications and/or equipment across the nine homes. Of these, 133 recommendations (77.78%) were approved and implemented. The contractors performed 63.9% of the recommendations, and the primary researcher performed 36.1% of the recommendations. There were 54 distinct types of recommendations across the 12 categories on the Rebuilding Together Safe at Home Checklist. Those 54 can be categorized as recommendations that either support ADL performance or IADL performance. One hundred and twenty-nine recommendations addressed ADL performance, while 42 addressed IADLs. These can be further subdivided into specific occupations identified in the *Occupational Therapy Practice Framework*, including functional mobility (66), bathing and showering (48), and toileting and toilet hygiene (15) for ADLs, and meal preparation and cleanup (8), safety and emergency maintenance (19, including exterior lighting, securing doors, and heating/electrical evaluations), and home establishment and management (15, including cleaning, item retrieval, laundry) for IADLs. Of the initial recommendations, the percentage approved for each category is as follows: functional mobility 72.73%, bathing and showering 85.42%, toileting and toilet hygiene 100%, meal preparation and cleanup 100%, safety and emergency maintenance 42.11%, and home establishment and management 86.67%. Of the nine participants who completed the pre-test, six general occupational performance areas were prioritized on the initial COPM administration (bathing = 9, stair mobility = 9, toileting = 7, meal preparation = 6, bed mobility = 3, accessing household items = 3).

The COPM pretest and posttest scores were averaged for each participant's self-reported performance and satisfaction with performance scores (see Figure 2). Combined, the mean for performance and satisfaction at pretest on a scale of 1–10 was 5.8 and 5.2, respectively. At posttest, the combined mean for performance and satisfaction was 8.2 and 8.5, respectively. The average change in performance from pretest to posttest was 2.4. The average change in satisfaction was 3.3. In eight of nine circumstances, the participants' self-reported scores increased for performance and satisfaction with performance from pretest to posttest. A paired t-test was used to compare the pretest and posttest data from the COPM for performance as well as for satisfaction with performance for the six participants with complete data. For COPM scores for performance from pretest to posttest, $p = .0006$. For COPM scores for satisfaction with performance from pretest to posttest, $p = .0002$. Both indicated statistical significance.

Figure 2*COPM Score Averages: Performance and Satisfaction Pretest and Posttest*

Estimated costs for paid caregiving and institutional care in the Philadelphia, PA, area for 2021 are as follows: adult day health care (5 days/week x 52 weeks), \$22,763; home health care aide (44 hours/week x 52 weeks), \$58,916; assisted living facility (private, one bedroom for 12 months), \$68,598; nursing home care (semi-private room, 12 months), \$139,477; and nursing home care (private room, 12 months), \$154,478 (Genworth Financial Inc., 2021). Across the nine homes, the mean average total cost was \$10,396.65, inclusive of contractor labor, all materials, and occupational therapist in-kind costs, which were valued at \$75 per hr, or \$150 per participant. The average cost for the seven Block Build homes was \$10,332.37. The average cost for the two Middle Neighborhood Initiative homes was \$10,621.63.

Discussion

The statistically significant increase in the COPM scores from pretest to posttest indicated that the impact of person-centered home modification recommendations made by the researcher benefitted the participants and supported occupational engagement. This trend was noted despite some recommendations being declined in each home, along with repairs taking several months to complete (because of COVID-19 pandemic delays and restrictions).

The types of recommendations that were commonly declined by RTP included: installation of an overhead light (5); repairing a mildly damaged and/or moldy tub (4); repairing an exterior door (2); repairing an exterior handrail (2); repairing an existing light fixture (2); request for a full heating or electrical evaluation (1 each). Declines by RTP occurred because of costs associated with repairs; the complexity of repairs and the time required to complete them; and the need for specialists, such as electricians. Understanding commonly approved and declined recommendations is important, as there is not always an opportunity to request an alternative if a recommendation is declined. Moving forward, communicating rationale for priority recommendations, along with offering backup and more cost-effective recommendations, could be useful in ensuring homeowner needs are addressed in the event an initial recommendation is declined.

The total average cost of modifications completed in the homes of the nine participants was \$10,396.65. In comparison to annual paid caregiving services ranging from \$22,763 to \$154,478, the home modifications were a fraction of the health care costs. In combination with the improvement of COPM scores, this data supports previous research that suggests home modifications, including client-centered evaluations led by an occupational therapist, are a cost-effective and impactful means of supporting aging in place.

Limitations

The originally anticipated timeline beginning with the initial occupational therapy home safety assessment through completion of item delivery and installation and re-assessment with the COPM was 6 weeks. However, because of the COVID-19 pandemic, the actual timeline for data collection for each participant ranged from 10 weeks/6 days, to 31 weeks. The total time for project completion, beginning with initial inspection by the RTP staff, ranged from 8–10 months, compared to 6 months pre-pandemic. The pandemic led to restrictions, such as the public health requirements limiting gatherings of people, which prohibited RTP's Block Build program from occurring. A Block Build is a tri-annual gathering, each with over 100 volunteers who implement a large volume of time-consuming home modifications and repairs under the guidance of skilled contractors. The cancellation of Block Build events throughout 2020 resulted in all planned work being assigned to a small team of paid contractors. Another factor that impacted contract work was prolonged shipping time for some construction materials. Although the work was eventually completed in all homes, the significant delay could have resulted in major challenges for homeowners, including falls, loss of independence in ADL and IADL tasks, and the potential need for paid caregiving or institutionalization. The researcher, fortunately, did not hear of any such negative effects in conversation with the homeowners.

The small sample size of this study may not support generalization of study results to other similar populations of low-income, older adults. In addition, these results may not translate to different demographics, including male homeowners, homeowners with a higher income, or homeowners of different racial and ethnic backgrounds. As such, these results are appropriate to view as a pilot study upon which future research can build. The exclusion of clients with dependence in one or more areas of occupation also limits the ability to determine the effectiveness of home modifications on individuals with more complex needs. Objective measures of occupational performance and fall risk were not performed, limiting the ability to understand the quantifiable impact of the home modifications on these factors. Since all of the data collected aside from the identified environmental barriers and solutions come from participant self-report, it is conceivable that some data may be inaccurate if participants lack self-awareness or insight, and this impairment was not assessed by the researcher. Determining whether changes in the COPM scores were directly related to the occupational therapist's recommendations is difficult to determine, as benefits were also likely imparted by the general home repairs and modifications included in the work scope beyond those recommended by the occupational therapist.

Implications for Occupational Therapy Practice

This study has the following implications for occupational therapy practice:

- Commonly identified occupational performance concerns and practical solutions to these concerns were provided by the researcher, which will support other occupational therapists in understanding the practice area of home modification to support aging-in-place.

- A replicable two-visit model for home modification consultation was provided, which will allow other occupational therapists to follow this evidence-based model for the provision of services.
- Cost effectiveness of home modification compared to paid caregiving or institutional care was demonstrated, which can support occupational therapists in advocating for reimbursement for home modification practice.
- The small, homogenous sample described here can be viewed as a pilot study. Replication of this model in future research projects would be beneficial to determine generalizability of these results.

Conclusion

Despite the limitations discussed and the challenges imposed by running this study during the COVID-19 pandemic, the study yielded significant results. This study builds on existing evidence supporting the positive impact of home modifications on occupational performance, and it provides a concrete, repeatable methodology that occupational therapists can use to serve low-income, older adults through their own volunteer or community-based practice. The results support the benefits and cost-effectiveness of occupational therapist-led home modifications for aging in place while supporting AOTA's *Vision 2025* to maximize "health, well-being, and quality of life for all people, populations, and communities through effective solutions that facilitate participation in everyday living" (AOTA, 2017).

References

- American Occupational Therapy Association. (2017). *Vision 2025. American Journal of Occupational Therapy*, 71(3), 7103420010p.1. <https://doi.org/10.5014/ajot.2017.713002>
- American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(Suppl. 2), 7412410010p1–7412410010p87. <https://doi.org/10.5014/ajot.2020.74S2001>
- American Occupational Therapy Association. (2021). *The AOTA and Rebuilding Together partnership*.
- Brim, B., Fromhold, S., & Blaney, S. (2021). Older adults' self-reported barriers to aging in place. *Journal of Applied Gerontology*, 40(2), 1678–1686. <https://doi.org/10.1177/0733464820988800>
- Fänge, A., & Iwarsson, S. (2005). Changes in ADL dependence and aspects of usability following housing adaptation - A longitudinal perspective. *American Journal of Occupational Therapy*, 59(3), 296–304. <https://doi.org/10.5014/ajot.59.3.296>
- Genworth Financial Inc. (2021). *Cost of care survey*. <https://www.genworth.com/aging-and-you/finances/cost-of-care.html>
- Gitlin, L. N., Winter, L., Dennis, M. P., Corcoran, M., Schinfeld, S., & Hauck, W. W. (2006). A randomized trial of a multicomponent home intervention to reduce functional difficulties in older adults. *Journal of the American Geriatrics Society*, 54(5), 809–816. <https://doi.org/10.1111/j.1532-5415.2006.00703.x>
- Goodacre, K., McCreadie, C., Flanagan, S., & Lansley, P. (2008). Enabling older people to stay at home: The costs of substituting and supplementing care with assistive technology. *British Journal of Occupational Therapy*, 71(4), 130–140. <https://doi.org/10.1177/030802260807100402>
- Lam, K., Shi, Y., Boscardin, J., & Covinsky, K. E. (2021). Unmet need for equipment to help with bathing and toileting among older US adults. *JAMA Internal Medicine*. <https://doi.org/10.1001/jamainternmed.2021.0204>
- Lau, G. W. C., Yu, M. L., Brown, T., & Locke, C. (2018). Clients' perspectives of the effectiveness of home modification recommendations by occupational therapists. *Occupational Therapy in Health Care*, 32(3). <https://doi.org/10.1080/07380577.2018.1491085>
- Mann, W. C., Ottenbacher, K. J., Fraas, L., Tomita, M., & Granger, C. V. (1999). Effectiveness of assistive technology and environmental interventions in maintaining independence and reducing home care costs for the frail elderly: A randomized controlled trial. *Archives of Family Medicine*, 8(3), 210–217. <http://dx.doi.org/10.1001/archfam.8.3.210>
- McColl, M. A. (2015). Occupation-focused models. In McColl, M. A., Law, M. C., & Stewart, D. *Theoretical Basis of Occupational Therapy* (3rd ed., pp. 53–66). SLACK Incorporated.
- Millán-Calenti, J. C., Tubío, J., Pita-Fernández, S., González-Abraldes, I., Lorenzo, T., Fernández-Arruty, T., & Maseda, A. (2010). Prevalence of functional disability in activities of daily living (ADL), instrumental activities of daily living (IADL) and associated factors, as predictors of morbidity and mortality. *Archives of Gerontology and Geriatrics*, 50(3), 306–310. <https://doi.org/10.1016/j.archger.2009.04.017>
- Petersson, I., Lilja, M., Hammel, J., & Kottorp, A. (2008). Impact of home modification services on ability in everyday life for people ageing with disabilities. *Journal of Rehabilitation Medicine*, 40(4), 253–260. <https://doi.org/10.2340/16501977-0160>
- Petersson, I., Kottorp, A., Bergström, J., & Lilja, M. (2009). Longitudinal changes in everyday life after home modifications for people aging with disabilities. *Scandinavian Journal of Occupational Therapy*, 16(2), 78–87. <https://doi.org/10.1080/11038120802409747>
- Rebuilding Together Philadelphia. (n.d.). *Our programs*. <https://www.rebuildingphilly.org/programs>
- Roberts, A. W., Ogunwole, S. U., Blakeslee, L., & Rabe, M. A. (2018). *The population 65 years and older in the United States: 2016 American Community Survey Reports*. <https://www.census.gov/content/dam/Census/library/publications/2018/acs/ACS-38.pdf>
- Sheffield, C., Smith, C. A., & Becker, M. (2013). Evaluation of an agency-based occupational therapist intervention to facilitate aging in place. *Gerontologist*, 53(6), 907–918. <https://doi.org/10.1093/geront/gns145>
- Somerville, E., Smallfield, S., Stark, S., Seibert, C., Arbesman, M., & Lieberman, D. (2016). Occupational therapy home modification assessment and intervention. *American*

- Journal of Occupational Therapy*, 70(5), 7005395010p1–7005395010p3. <https://doi.org/10.5014/ajot.2016.705002>
- Stark, S. (2004). Removing environmental barriers in the homes of older adults with disabilities improves occupational performance. *OTJR Occupation, Participation and Health*, 24(1), 32–40. <https://doi.org/10.1177/153944920402400105>
- Stark, S., Landsbaum, A., Palmer, J. L., Somerville, E. K., Morris, J. C., & Friedman, D. H. (2009). Client-centered home modifications improve daily activity performance of older adults. *Canadian Journal of Occupational Therapy*, 76(Suppl_1), 349–363. <https://doi.org/10.1177/000841740907600s09>
- Stark, S. L., Somerville, E., Keglovits, M., Smason, A., & Bigham, K. (2015). Clinical reasoning guideline for home modification interventions. *American Journal of Occupational Therapy*, 69(2), 6902290030p1–6902290030p8. <https://doi.org/10.5014/ajot.2015.014266>
- Stark, S., Somerville, E., Conte, J., Keglovits, M., Hu, Y. -L., Carpenter, C., Hollingsworth, H. & Yan, Y. (2018). Feasibility trial of tailored home modifications: Process outcomes. *American Journal of Occupational Therapy*, 72(1). <https://doi.org/10.5014/ajot.2018.021774>
- Szanton, S. L., Thorpe, R. J., Boyd, C., Tanner, E. K., Leff, B., Agree, E., Xue, Q. -L., Allen, J.K., Seplaki, C.L., Weiss, C.O., Guralnik, J.M., & Gitlin, L. N. (2011). Community aging in place, advancing better living for elders: A bio-behavioral-environmental intervention to improve function and health-related quality of life in disabled older adults. *Journal of the American Geriatrics Society*, 59(12), 2314–2320. <https://doi.org/10.1111/j.1532-5415.2011.03698.x>
- Szanton, S. L., Leff, B., Wolff, J. L., Roberts, L., & Gitlin, L. N. (2016). Home-based care program reduces disability and promotes aging in place. *Health Affairs*, 35(9), 1558–1563. <https://doi.org/10.1377/hlthaff.2016.0140>
- Tanner, B., Tilse, C., & de Jonge, D. (2008). Restoring and sustaining home: The impact of home modifications on the meaning of home for older people. *Journal of Housing for the Elderly*, 22(3), 195–215. <https://doi.org/10.1080/02763890802232048>
- United States Census Bureau. (2017). *Facts for features: Older Americans month: May 2017*. <https://www.census.gov/newsroom/facts-for-features/2017/cb17-ff08.html>
- United States Department of Housing and Urban Development: Office of Policy Research and Development. (n.d.). *Income limits*. <https://www.huduser.gov/portal/datasets/il.html>
- Waldersen, B. W., Wolff, J. L., Roberts, L., Bridges, A. E., Gitlin, L. N., & Szanton, S. L. (2017). Functional goals and predictors of their attainment in low-income community-dwelling older adults. *Archives of Physical Medicine and Rehabilitation*, 98(5), 896–903. <https://doi.org/10.1016/j.apmr.2016.11.017>
- World Health Organization. (2020). *Healthy life expectancy (HALE) data by country*. <https://apps.who.int/gho/data/node.main.HALE?lang=en>
-