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The Impact of Fall Efficacy on Occupational Performance in Community-Dwelling Older Adults

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The Impact of Fall Efficacy on Occupational Performance in Community-Dwelling Older Adults

by

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Abstract

Falls are a major health concern in the older adult (OA) population. While there is research on falls and their prevention, research on how low fall efficacy (FE) impacts the occupational engagement of the OA population is limited. FE is defined as the confidence a person has in his/her ability to complete a task without falling (Tinetti & Powell, 1993). A qualitative study was conducted using a phenomenological approach to explore the lived experiences of OAs with low FE and the impact on occupational performance. Participants who scored ≤ 6 on the Modified Fall Efficacy Scale (MFES) engaged in a semi-structured interview, that explored the relationship between low FE and participation in occupations. Researchers asked open-ended questions to explore the activities impacted by participants low FE. A constant comparison method was utilized to analyze the interviews. The findings suggested that participants discontinued certain occupations due to a poor fit between the environment and the occupational challenges. However, those who experienced a good fit between the environment and the occupational challenges continued to participate in the activity using environmental modifications when needed. The occupations that had the lowest average scores on the MFES were occupations that mandated a narrow base of support (BOS) and the shifting of one's weight. Therefore, occupational performance was impacted by the demands of the activity, the functional ability of the person, and environmental modifications.

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Introduction

The United States (U.S.) Census Bureau reports that the baby boomer generation will make up 20% of the population by the year 2029. By the year 2056, the population of adults aged ≥ 65 years (older adults) will become larger than the population of people under 18 years of age (Colby & Ortman, 2014). As the population ages, older adults (OA) often encounter physiological and psychological changes that put them at risk of falling (Bergen, Stevens, & Burns, 2016).

Falls are the leading cause of death and disability for OAs (Ambrose, Paul, & Hausdorff, 2013). Roughly one-third to one-half of OAs will experience a fall at least once annually (He, Goodkind, & Kowal, 2016). Falls interfere with elderly individuals' participation and performance in everyday activities (Chase, Mann, Wasek, & Arbesman, 2012). As the population ages, managing falls and fall risks will continue to be a priority for health care providers.

Fall prevention interventions often focus on physical remediation, however, few interventions consider the underlying and pervasive psychological effects that falling has on the individual's behavior and life participation. One of the psychological factors that have been investigated is fall efficacy (FE), which is defined as the confidence a person has in his/her ability to complete a task without falling (Tinetti & Powell, 1993). The psychological construct of FE is based on Albert Bandura's theory of self-efficacy (SE), which is defined as the belief or confidence in one's ability to succeed in a given task (Bandura, 2008; Tinetti, Richman, & Powell, 1990). Individuals who experience a fear of falling (FoF) or have decreased confidence

in their ability to complete a task without falling (low FE) will often limit or avoid participation in activities of daily living (Schepens et al., 2012; Tinetti & Powell, 1993).

Although falls are common in OAs, they are largely preventable (Bergen et al, 2016). Occupational therapists (OTs) play a vital role in fall prevention by providing holistic and client-centered interventions that are unique to the profession. OTs evaluate the interaction between the client's physical capabilities and how they function in their everyday environment (American Occupational Therapy Association [AOTA], 2017). In addition to current fall prevention interventions, OTs may benefit from further exploring FE and the role it plays in supporting occupational performance and participation. In order to foster higher levels of FE and reduce falls amongst at-risk OAs, more qualitative research may help to gain a deeper understanding of the development and lived experience of low FE in OAs. This qualitative research seeks to provide OTs, and other healthcare providers with a better understanding of how to support OAs with low FE with the goal of improving participation in meaningful occupations.

Background

Falls in the Elderly

According to the Centers for Disease Control (CDC) and Prevention (2017b), the frequency and consequences of falls within the OA population are of a growing concern in the U.S. Each year, more than one in four OAs experience a fall, but less than half report the incident to their health care professional (CDC, 2017a). Falls in the elderly can cause severe injuries that may result in functional limitations and loss of independence (Bergen et al., 2016). In fact, as a result of falls, 3 million OAs are treated in emergency departments each year with 800,000 patients being hospitalized for head injuries or hip fractures (CDC, 2017b). Falls are not only a major health risk, but they are also costly. A recent study estimated that the annual medical costs for falls across the U.S. healthcare system is $50 billion (Florence et. al, 2018).

The number of falls an OA experiences may also be a predictor of physical and functional abilities. A study conducted by Thaweewannakij, Suwannarat, Mato, and Amatachaya (2016) explored the impact multiple falls had on function in community-dwelling OAs living in Thailand. Three separate groups comprised of 30 individuals each were created based on how many falls participants had in the past six months. The resulting groups included individuals that experienced no falls, individuals that experienced one fall, and individuals that experienced multiple falls. Performance tests revealed that individuals who experienced multiple falls had poorer functional ability when compared to those who experienced single-falls and/or no-falls.

Fall Efficacy

Definition. SE is the belief or confidence in one's ability to succeed in a given task (Bandura, 2008; Tinetti, Richman, & Powell, 1990). FE is based on Bandura's theory of SE and

has a strong theoretical foundation regarding the cognitive processes that influence human behavior (Tinetti, Mendes de Leon, Doucette, & Baker, 1994). Studies have demonstrated that a higher level of SE is correlated with a greater quality of life, reduction of pain, and increased participation in activities (Pérez et al., 2016). Tinetti and colleagues were interested in learning more about FoF and the impact it has on community-dwelling OAs. However, the researchers soon determined that directly asking participants questions concerning their fears could yield inaccurate results, as the term "fear" has a negative connotation and subjects are less likely to admit to fear (Tinetti, Richman, & Powell, 1990). Therefore, the researchers developed the Falls Efficacy Scale to measure FoF as a construct, and to explore the impact fear has on function in OAs (Tinetti, Richman, & Powell, 1990). Tinetti, Richman, and Powell (1990) operationalized the term "fear of falling" as low perceived confidence at avoiding falls during daily activities, which is also referred to as low FE.

FE and FOF. FoF and FE are constructs frequently used to operationalize the psychological effects falls have on people who are at risk of falling or have already fallen (Tinnetti et. al, 1994; Li et. al., 2002). Although both concepts refer to the level of confidence or fear related to falls, evidence suggests that FoF and FE are two distinct constructs and should be studied separately (Tinetti et al., 1994; Li et al., 2002). Despite these findings, researchers continue to use the terms interchangeably and often refer to one construct while measuring another (Jørstad, Hauer, Becker, & Lamb, 2005).

Tinetti et al. (1994) further explored the effects of FoF and FE and found that while FoF may limit function in OAs, it is often a poor predictor of actual behavior. A multivariate analysis, demonstrated that FE was independently and positively correlated with all functional measures with the most significant results related to basic and instrumental activities of daily living (ADL-

IADL; $p < .0001$) and physical functioning ($p<.001$); whereas FoF was only weakly associated with ADL- IADL functioning. Activities of daily living (ADLs) are defined as activities concerned with taking care of one's own body, while instrumental activities of daily living (IADLs) are defined as activities that support daily living within the home and community with more complex interactions than ADLs (American Occupational Therapy Association [AOTA], 2014). The study asserts that FE was a better predictor of physical functioning than FoF in community-dwelling OAs (Tinetti et al., 1994). These findings are further supported by evidence that fall prevention programs that incorporate strategies designed to improve FE have been associated with a significant reduction in falls in OAs (Clemson, Cumming, Kendig, Swann, Heard, & Taylor, 2004).

FE and Activity Levels. Physical activity is important to overall health and well-being in OAs and may be impacted by FE. Schepens, Sen, Painter, & Murphy (2012) conducted a meta-analysis investigating the relationship between FE measures and activity in community-dwelling OAs. The study included measures for occupation-based functions in ADLs or IADLs and measures of performance skills. The researchers defined performance skills as the fundamental skills required to perform everyday activities, such as strength and balance. The Fall Efficacy Scale (FES) and the Activities-specific Balance Confidence (ABC) Scale were used to measure FE. The researchers found a strong positive relationship between FE and activity ($r = .53$; 95% CI [.47, .58]), indicating that higher FE, or confidence in the ability to perform ADLs without loss of balance, was associated with higher levels of activity function and performance skills.

Li et al. (2002) investigated the relationship between FoF and FE, and their relationship with functional ability, specifically related to balance and physical functioning. The study examined 256 community-dwelling OAs (*M* age = 77.5). The study used performance-based

tests in addition to self-reported measures to assess physical function and balance. The results further indicated that FoF has an inverse relationship to FE; participants with low levels of FoF reported higher levels of FE. Furthermore, strong and significant correlations were also found between FE and functional ability**.** The findings of the study indicate that levels of FoF influence FE, which in turn impacts functional ability. Although the two constructs seem to be related, FE appears to be the main driver in predicting activity function.

FE and Falls. To evaluate FE and its relationship to falls, Hellström et al. (2013) explored the correlation between FE, activity avoidance, and falls in OAs. FE was assessed using the Swedish version of the FES(S) which is comprised of both ADL and IADL questions. Fallers were described as participants who reported two or more falls in the past six months. Of the 378 community-dwelling OAs, 36% reported avoiding activities due to their concerns with falling. Moreover, FE was lower among fallers and low FE scores in IADLs were found to be the strongest predictor of falls.

Fall Efficacy and Occupational Therapy

The goal of occupational therapy is to enhance or enable clients' participation in desired everyday activities (AOTA, 2014). OTs play a significant role in fall prevention efforts due to safety concerns and the negative consequences falls have on occupational performance. OTs' fall prevention responsibilities include the evaluation and remediation of the environmental and physiological factors that contribute to falls for clients, caregivers and communities. This knowledge helps OTs to develop holistic interventions that are tailored to the specific needs of each client as well as identify which client factors impact falls (AOTA, 2014). Occupational therapy may be more effective when the interventions address the factors identified through the lived experiences of individuals with low FE. Therefore, a better understanding of low FE will

help therapists design more efficacious fall prevention interventions that encourage confident and safe participation in desired occupations.

Conclusion

Falls are a major health issue in the elderly U.S. population as falls are the leading cause of death in OAs (Ambrose, Paul, & Hausdorff, 2013). As this population continues to grow, OTs will be faced with the challenge of providing effective fall prevention interventions in support of occupational engagement and performance. Evidence has supported a strong relationship between low FE, occupational engagement, and falls in the elderly population. However, studies that identify the factors that contribute to low FE and the in-depth impact of low FE on occupational engagement in OAs is sparse. Further understanding the origin and impact of low FE is important to fall prevention intervention planning as it would provide an understanding of factors to address in interventions.

Statement of Purpose

Low FE is related to a lower level of occupational engagement and has been shown to be an important consideration for OAs' experiences with falls (Tinetti et al., 1994). However, the related literature currently lacks in-depth studies exploring individuals' lived experiences of low FE and how it influences occupational engagement. Fall prevention strategies, such as environmental modifications, caregiver training, and physical remediation are an integral part of therapy when working with OAs who are at risk for falls (AOTA, 2017). However, little emphasis is placed on the psychosocial influence in relation to falls. The purpose of this study was to explore the lived experience of low FE among community dwelling OAs and the impact low FE has on occupational engagement.

Theoretical Framework

The theoretical frameworks selected for this research topic were Bandura's theory of SE, Tinetti's theory of FE that was influenced by SE, and the person-environment-occupation (PEO) model. Bandura (1982) described SE as a cognitive process that influences thought patterns, actions, and emotional arousal. A person's SE affects his or her ability to execute a specific task. Bandura (1982) suggested that SE may be associated with functional decline as individuals with low SE tend to avoid activities. Therefore, the construct of SE was integrated into this study by exploring the construct of FE and the influence it had on individualss level of participation in occupations.

In addition to Bandura's theory of SE, the PEO model also guided our research, as this model views optimal performance as fostered by the fit between the person, the environment and the occupation (Law, Cooper, Strong, Stewart, Rigby, & Letts, 1996). The model defines the

person as a dynamic and changing being, with skills and abilities to meet roles over a span of time. The environment is the physical, social, cultural, and institutional factors that influence occupational performance. Lastly, the occupations include self-care, productive, and leisure pursuits (as cited in Pedretti, 2013). The PEO model guided this research by serving as a model for how the fit between the participants (including their levels of FE), environment, and occupation influenced their ability to safely and capably participate in everyday activities.

Ethical and Legal Considerations

The AOTA Code of Ethics (2015) was used to guide this capstone project through the principles of nonmaleficence and autonomy. The principle of nonmaleficence, applied to occupational therapy, states that occupational therapy personnel shall refrain from causing any harm or injury to patients intentionally or unintentionally (AOTA, 2015). In compliance with this principle, the researchers informed the study participants of their right to confidentiality and assured them that their personal information would not be shared publicly. The principle of autonomy, according to the guidelines, is that occupational therapy personnel shall respect the right of self-determination, privacy, confidentiality, and consent (AOTA, 2015). Following this principle, the participants in the study were informed of their right to choose to partake in the study and to discontinue the study at any time.

An Institutional Review Board (IRB) application was submitted and approved by the Dominican University of California Institutional Review Board for the Protection of Human Subjects. The researchers obtained consent to recruit participants from the community by coordinating with The Redwoods Retirement Community (The Redwoods) program director and by word of mouth. All the participants in this study signed an informed consent (appendix A) to partake in the study. The informed consent ensured the participants had knowledge of their individual rights and understood the purpose of the study, how the study was conducted, and understood that the interviews would be audio-recorded. The researchers conducted interviews and met with participants according to the participants' availability.

Hill, Schwarz, Kalogeropoulos, and Gibson (1996) were the original authors who created the Modified Fall Efficacy Scale. Consent to use the MFES was obtained through email

communications with professor Keith Hill, the head of the School of Physiotherapy and Exercise Science at Curtin University in Australia (Appendix B).

Methods

Design

A qualitative design using a phenomenological approach was used to understand the lived experiences of community-dwelling OAs and the impact low FE had on their occupational engagement. Qualitative research involves data collection through interview and observation to explore individual experiences (Portney & Watkins, 2009).

Participants were screened for low FE using the MFES. The MFES is a self-administered questionnaire comprised of 14 questions that ask individuals to rate their confidence in their performance in both indoor and outdoor activities. The MFES has demonstrated high internal consistency (Cronbach's alpha .95) and high test-retest reliability (intraclass correlation coefficient .93) (Hill, Schwarz, Kalogeropoulos, & Gibson, 1996; Moore & Ellis, 2008). The scale uses a 10-point rating for each question with 0 indicating 'not confident at all', 5 indicating 'fairly confident', and 10 indicating 'completely confident'. The scores are then averaged to create a summary score from 0 to 10 (Gettens & Fulbrook, 2015). Higher scores indicate high FE, whereas lower scores reveal low FE (Appendix C).

The measurement properties of MFES were evaluated by Hill et al. (1996). The researchers found that in 111 healthy community-dwelling OAs who reported minimal to no FoF, the average score was a score of 9.76 (SD= .32) on the MFES. In the same study, 68 OAs referred from the Falls and Balance Clinic due to recent falls, averaged a score of 7.69 (SD= 2.21) on the MFES (Hill et al., 1996). Based on the evidence, the researchers of this study determined that a cut-off score of $\leq$ 6 on the MFES would be sufficient in capturing OAs who had low FE, but were mobile enough to be found in and recruited from the community.

Participants engaged in a semi-structured interview, that explored the relationship between low FE and participation in occupations (Appendix D). The researchers asked open-ended questions to explore when feelings of low FE began, the activities impacted by low FE, and how participants adapted to low FE.

Recruitment

Participants were recruited from The Redwoods via communication with the program director and the surrounding local community through word of mouth. A flyer was posted on The Redwood's community bulletin board (Appendix E). Four participants were recruited using purposive sampling through an announcement at the beginning of an exercise class. One subject was recruited by word of mouth from the Healthy Seniors Program at Dominican University. Those interested in the study completed the MFES to determine eligibility for the study. The inclusion criteria for this study required that participants scored 6 or less on the MFES, and that they be 65 years of age or older, ambulatory, English speakers, and living within the Bay Area. It was also required that participants demonstrated sufficient cognitive abilities to understand the consent form (Appendix F) and provide appropriate consent.

Data Collection Procedures

FE scores were collected from each participant and interviews were audio recorded. Confidentiality was maintained by assigning an identification number to each participant and utilizing a password protected program. A general description of the study was provided to potential participants. Individuals with scores of ≤ 6 on the MFES were asked to participate in the study. Participants who met the inclusion criteria and were interested in participating in the study signed a consent form outlining the purpose, procedures, benefits, and risks inherent to the

study. Participants were also made aware that they would be audio recorded and could terminate the interview at any time. A semi-structured interview was scheduled depending on participant availability either on the same day or within the following week. The duration of each interview was dependent on the extent of the information that the participants were willing to share. The interviews lasted no longer than 60 minutes. Interviews were recorded and transcribed for analysis purposes. Participants were told to contact researchers for any further clarification via in-person, phone call, or email.

Examples of topics the researchers explored were: What are the current activities participants engaged in? What activities do participants feel less confident in? What are the activities participants would like to engage in? Are there resources participants feel would help them become more confident in performing activities without falling? When did participants first experience a loss of confidence? The full semi-structured interview script may be viewed in Appendix D. Researchers were responsible for verbatim transcription of the interviews.

Data Analysis

A constant comparison method was used to code the transcripts and identify themes. Each interview was transcribed verbatim. The coding for thematic analysis was further refined using computer-assisted software, Dedoose. The researchers used Dedoose to help organize and discover overarching themes. To ensure inter-rater reliability, researchers held routine meetings to discuss the findings and agreements were made based on majority consensus. The researchers also consulted regularly with the faculty advisor to control for bias. Trustworthiness was established by coding and recoding the data both independently and in group meetings. The researchers created a representation of this study's results on FE based on the principles of the PEO model.

Results

A total of five OAs participated in this study (Table 1). Three participants resided in assisted living facilities, two participants were home dwellers, and all participants lived in the Bay Area. The mean MFES score for the total sample was 4.53 (SD = 1.1).

The codes of this study were organized using the PEO model. The results' emphasized the impact the environment had on the participants' client factors and occupational engagement. Participants experienced a 'good fit' if the interaction between the person, environment, and occupation supported occupational challenges and engagement. In contrast, the participants experienced a 'poor fit', when the relationship between the person, environment, and occupation hindered activity participation.

Two prominent, overarching themes emerged from this study when evaluating the impact of low fall efficacy on individuals: the profound impact the environment had on occupational performance and the variability in participant-driven compensation and adaptive strategies.

Person

A commonality that was identified were participants' awareness to their personal challenges and characteristics. Participants' descriptions included client factors, such as their diagnoses, psychosocial characteristics, and the use of adaptive equipment.

> *Client factor, mental functions: "With my memory beginning to fade with age, it makes me nervous I will forget places where I should be careful"*

> *Client factor, muscle functions: "I don't walk long distances anymore because my legs have gotten very weak"*

Table 1 Participant Characteristics

Participant	**Age**	**Sex**	**Living Status**	**Client Factors (self-reported)**	**Average MFES**
1- Mary	NR	F	Redwoods Senior Living Facility	Poor balance Cautious	5.07
6- Beth	85	F	Redwoods Senior Living Facility	Poor balance Neuropathy and weakness in both legs R drop foot	4.57
8- Pete	NR	M	Assisted Living Facility	Poor balance Stenosis Neuropathy in the feet Dizziness (medication side effect) Anxiety Hypervigilant	2.5
3- Ann	89	F	Home	Poor balance Fatigue Fibromyalgia Pain	5.93
7- Ellen	87	F	Rental home	Poor balance Pain in L leg Memory beginning to decline	4.56

NR- not reported, two clients confirmed they were over the age of 65, but did not want to state their age M- male; F- female, MFES- Modified Fall Efficacy Scale Averages
Client Factors - are defined as specific physical and psychological capacities, characteristics, or beliefs that reside within the person and influence performance in occupations (AOTA, 2014)

Occupation

The impact of low FE was evident in participants' ability to engage in meaningful occupations. The occupations identified by participants included gardening, attending open houses, home maintenance, grocery shopping, community mobility, bathing, and socializing.

> *Occupation, socialization: "I can't run to the drug store, I can't say 'OK' to a friend... 'Let's go to the movie'"*

Occupation, grocery shopping: "...grocery store and there's a bunch of people going different directions and I'm just trying to go forward... so it's situations where there is a lot of um, there's a lot of big variables: kids, mothers, old people. They all blend into different directions"

Environment

Participants had a tendency to describe how the environment helped or hindered their confidence. The environment included the participants' living status (e.g. assisted living community or other) and the presence or lack of environmental modifications (e.g. having grab bars).

Poor Fit: "Sometimes when trying to reach something high up, I say should I bother? I might fall."

Poor Fit:" ...every time I'm in the shower I'm worried because I say so, 'uh oh,' because I uh, I get worried, I'll have to grab the shower curtain which wouldn't help...and it's not ours because we are renting an apartment. So, we can't put it (grab bars) in, so that's the way I have when I'm taking a shower."

Good Fit: "Everything in the kitchen is low for someone in a wheelchair so it's difficult to fall"

Theme 1: The Fit Between the Environment and Occupational Performance

A 'poor fit' between the environment and occupational performance was described by several of the participants. These participants ceased involvement in some of the activities they once enjoyed due to environmental barriers. Pete disclosed that he felt less confident in ascending and descending stairs that led to a friend's house, where he had previously experienced a fall. As a result, he no longer visited the friend's home, thereby limiting his social interactions. Pete also gave up frequenting open houses, a previously valued activity, for the fear that front entry stairs could hinder his ability to enter the home and result in public embarrassment. Furthermore, Pete experienced anxiety and vulnerability during community

outings, such as when crossing the street, due to the limited time given and the need to ambulate quickly.

Another participant, Ellen, reported feeling nervous when stepping in and out of the tub, as well as when reaching into cabinets. She was unable to install grab bars or make home modifications due to the rental restrictions imposed by her landlord. Ellen also reported that she had fallen while visiting a shopping center. The factors that contributed to her fall were uneven surfaces and difficulty in lifting her foot. The participant disclosed that when revisiting the shopping center, she worries that the unleveled pavement may lead to another fall. Feelings of hopelessness were identified in many participants who were no longer able to perform the same activities as before due to environmental barriers. Overall, the lack of environmental modifications and accessibility were shown to limit occupational participation.

A ‘good fit’ between the environment was demonstrated when environmental supports were present. Participants continued to engage in their desired occupations when feeling confident in their environment. One participant, Beth, had recently moved to The Redwoods after experiencing several falls in the home she had once lived. The Redwoods has many environmental modifications throughout the apartment homes and facilities, which include leveled surfaces, ramps, lowered kitchen counters, automatic opening doors, and grab bars in the shower. Beth identified feeling less nervous when participating in certain activities due to the new environmental modifications, however, she still has residual feelings of anxiety due to her past experiences with falls.

Another participant, Mary, explained that she discontinued gardening due to the unleveled grounds at her previous residence. In order for her to access the outdoor garden, she had to navigate a steep path as well as stairs. She experienced increased difficulty in maintaining

her balance when walking to the garden, which eventually led to the discontinuation of this desired leisure activity. Mary decided to move to The Redwoods because the facility provided leveled grounds and had ramps instead of stairs. The facility also has a leveled garden which supported Mary's continued engagement in gardening.

Theme 2: Compensation and Adaptive Strategies

Despite having low FE, some participants continued engaging in activities by using adaptive and compensatory techniques. Mary became cautious of her surroundings and abilities after experiencing a fall. She now compensates by mentally preparing and allowing herself more time when taking a bath or shower, getting dressed/undressed, and when preparing a meal. A community-dwelling OA, Ann, was able to achieve a 'good fit' in certain occupations due to modifying her occupational routines. For an example, before showering, Ann places her glasses and cell phone on top of the commode. Ann reported that one of her friends had taken a fall while bathing and was unable to call for help. Adhering to this routine helped Ann feel more confident and facilitates her participation in bathing. Ann also reported that prior to engaging in other occupations, she is considerate of her balance and wears proper footwear.

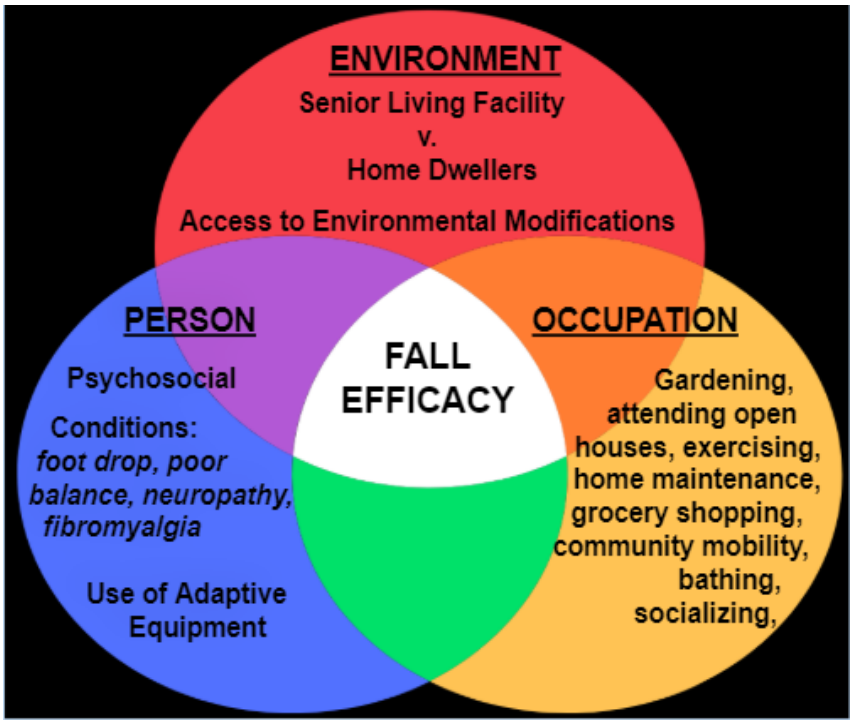
Additionally, Beth adapted community outings by ensuring that a community member was able to assist her, such as bus driver or LYFT driver, when getting in and out of vehicles. Pete had also adapted his occupations by ensuring he uses a walker during long community outings, by clearing his shower of moisture before stepping in, using a reacher to obtain items in high places, and rethinks his approach before attempting an activity that puts him at risk for falls.

However, not all occupations have been adapted or compensated to ensure success in the engagement of activities. Pete had difficulty ascending and descending stairs without railing, therefore, he avoided attending friends' homes or open houses if there are no rails present.

Similarly, Ellen avoided stairs that are too steep and thus, limits her community outings. Ellen also avoided reaching into high cabinets and resists the aid of a walking stick.

The Model presented in Figure 1 was created based on the interaction between the participants' personal characteristics, such as balance and adaptability to change, the characteristics of their primary occupations, and their access to environmental barriers or supports.

Figure 1 Fall efficacy represented through the PEO model. The model outlines three interactive components that influenced fall efficacy.



Discussion

Although factors, such as an individual's diagnosis and thought process contributed to lower FE, the most significant factors that affected the participants' activity engagement were the environment and the participants' ability to use compensatory and adaptive techniques. Some participants experienced a 'poor fit' between the environment and occupational performance, which contributed to discontinuation of certain activities. A 'poor fit' existed when environmental modifications were not available to support participants in their desired occupations. Other participants experienced a 'good fit', and thus continued to engage in specific activities with the appropriate environmental modifications. In addition to environmental modifications, participants also used compensatory strategies to continue engagement in activities or withdrew from the activity altogether as a result of low FE.

Analysis of the participants' MFES scores revealed that participants frequently reported feeling less confident in activities where their base of support (BOS) was challenged. Balance is defined by an object or a person's ability to sustain posture and equilibrium and is achieved when the center of gravity is above the BOS. The BOS is the area beneath the object or person that makes contact with the supporting surface. During weight shifting, the center of gravity moves potentially outside the BOS, challenging a person's ability to maintain balance (Pollock, Durward, Rowe, & Paul, 2000). When the center of gravity exceeds the BOS, it can lead to falls. The activities that challenged the participants' weight shifting abilities were consistently rated the lowest on the MFES. These activities included stepping into and out of a bath or shower (average score = 3.7), getting in/out of a chair (average score = 3.7), reaching into cabinets or closets (average score = 3.7), and using the front or rear steps at home (average score = 2.7). For example, Ellen avoided reaching for objects in overhead cabinets. Reaching into overhead

cabinets propels the body's mass and center of gravity forward, and thus Ellen was challenged to maintain her balance within her BOS. Additionally, the activities mentioned earlier are also related to having a narrow BOS. If the BOS is reduced, the occurrence of moving the center of gravity outside of the narrow BOS increases (Pollock, Durward, Rowe, & Paul, 2000) and thus, fall risk heightens. For example, when stepping up or down from steps, the BOS is reduced to the surface area of one foot. Otherwise, weight is usually distributed between both feet and widens the surface area to support an individual's center of gravity. A participant who had difficulty with a narrow BOS was Pete. He avoided attending 2-story open houses with stairs or stairs within the community that do not have railings. Using railings would help widen the BOS by distributing mass to the arm that is upon the railing. Therefore, participants in this study scored the lowest average in occupations that challenged their ability to keep their center of gravity within their BOS or activities that narrowed their BOS.

The participants attributed their difficulties with balance to age-related changes or to physiological conditions, such as distal neuropathy, dropped foot, or fibromyalgia. All participants reported poor balance as a limitation to activity engagement and also a reason for decreased confidence in activity engagement and falling. Bishop, Light, Patterson, and Romero (2010) affirmed the relationship between balance and FE. Their study reported that participants who engaged in a 12-week home exercise program that was specific to their balance needs demonstrated significant improvements in FE at the end of the home program. Additionally, high FE in performing ADLs without losing balance was associated with higher levels of activity function and performance skills (Schephens, Sen, Painter, and Murphy, 2012).

Limitations

This study contained several potential limitations, however, the researchers made significant strives to reduce them throughout the process. The sample lacked demographic diversity, as many of our participants resided in the affluent community of Marin County, California. There were also more female participants (n=4) than men (n=1), which resulted in a lack of male perspective on low FE. For the purpose of this study, the researchers used a cut off score of 6 on the MFES to determine low FE. However, there is insufficient research regarding what number on the MFES constitutes as 'low or high FE'. Additionally, the study utilized the MFES as a measure of FE, however, the use of other efficacy scales such as the ABC Scale and the Fall Efficacy Scale International in conjunction with the MFES could have provided more comprehensive data about the psychological impact on falls.

Clinical Implications

Many fall prevention interventions focus on environmental modifications and adaptations (AOTA, 2017), however, the psychological construct of FE is typically overlooked. Occupational therapy is a client-centered profession; therefore, it is important to understand how individuals experience their environment and adapt their activities to accommodate for low levels of FE. Our study revealed that occupational participation was impacted by the environmental supports and barriers that exist for individuals with low FE. Therefore, it would be beneficial for OTs to address levels of efficacy when providing fall prevention interventions and simultaneously focus on how the environment impacts individual's levels of FE. Additionally, when analyzing the responses to the MFES, participants scored the lowest on occupations that required weight shifting or having a narrow BOS. When working with clients

during occupations that require weight shifting and a narrow BOS, it may be beneficial to assess levels of efficacy to identify occupations that may pose the greatest risks to falls.

Future Research and Recommendations

Future research on low FE should explore the lived experiences of individuals outside of the Bay Area to see how low FE impacts individuals from different geographical regions and cultures. It would also be beneficial for future research to explore different diagnoses, ages, genders, and the influence different living environments have on FE. Lastly, valuable information may be gleaned from examining the relationship between different averages on the MFES, such as a mean score of 3 verses a mean score of 7, and its influence on occupational performance.

Conclusion

This study explored the lived experiences of community-dwelling OAs with low FE and their occupational engagement. The degree of environmental supports and how well the supports fit or addressed the occupational challenges faced by our participants, was described as a prominent theme related to occupational participation. The fit between the environment and occupational challenge either supported or created barriers to occupational engagement. Furthermore, successful occupational engagement occurred when participant-driven compensatory strategies and adaptive techniques were incorporated into daily routines. Occupations identified on the MFES with the lowest confidence scores were occupations that required a narrow BOS and occupations that required a person to shift his/her weight. By exploring the lived experiences of OAs with low FE, this study adds to the research by informing health professionals of how the environment may impact an OA with low FE and their occupational participation. Lastly, by addressing the environment in relation to various occupational challenges and providing compensatory and adaptive strategies to community-dwelling OAs, these individuals may have the confidence to continue participating in meaningful occupations.

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Appendix A

CONSENT FORM TO BE A RESEARCH PARTICIPANT

DOMINICAN UNIVERSITY OF CALIFORNIA

Purpose and Background

Student researchers, Erin DeNola, Michelle Fong, Merit Franklin, and Araya Moua, and faculty advisor Dr. Susan Morris of the Department of Occupational Therapy at the Dominican University of California are conducting a qualitative study exploring older adults' confidence in avoiding falls while participating in everyday activities. The purpose of this study is to explore the experiences of older adults with lower levels of confidence, the factors that contribute to it and their fall prevention strategies during activity participation. The project will contribute to the field of occupational therapy and other health professions by adding to our understanding of how intrinsic factors, such as confidence in the ability to avoid falls, is related to older adults' daily lives.

1. I understand that participation in this research will involve taking part in a 60 minute, in-person interview. The interview is a discussion about my daily activity participation and the confidence I have with falls.

2. I have been made aware that the interviews will be recorded. All personal references and identifying information will be eliminated when recordings are transcribed. I am aware that all participants will be identified by numerical code only; the master list for these codes will be kept by the student researchers in a locked file, separate from the transcripts. Coded transcripts will be seen only by the researchers and their faculty advisors. One year after the completion of the research, all written and recorded materials will be destroyed.

3. I understand that I will be discussing topics of a personal nature and that I may at times feel uncomfortable with during the interview. I can refuse to answer any question. I may elect to stop the interview at any time.

4. If I become uncomfortable or upset during any part of the interview, the student researchers will attempt to alleviate the situation by allowing me to take a break until I give permission to continue. If I become uncomfortable, I can reschedule the interview for another time and day or choose to withdraw from the study.

5. Although I will not directly benefit from participation in this study, I may experience satisfaction from knowing that I am adding to health professionals' understanding of factors associated with low fall efficacy and contribute to current fall prevention intervention strategies.

6. I understand that if I have any further questions about the study, I may call Dr. Susan Morris, the academic advisor of the study, (415) 482-2486 or email susan.morris@dominican.edu. If I have any questions or comments about participation in this study, I should first talk with the researchers or the academic advisor. If for some reason I do not wish to do this, I may contact the Dominican University of California

Institutional Review Board for the Protection of Human Participants (IRBPHP), which is concerned with the protection of volunteers in research projects. I may reach the IRBPHP Office by calling (415) 482-3547 and leaving a voicemail message, or FAX at (415) 257-0165, or by writing to IRBPHP, Office of Associate Vice President for Academic Affairs, Dominican University of California, 50 Acacia Avenue, San Rafael, CA 94901.

7. All procedures related to this research project have been satisfactorily explained to me prior to my voluntary election to participate.

I HAVE READ AND UNDERSTAND ALL OF THE ABOVE EXPLANATION REGARDING THIS STUDY. I VOLUNTARILY GIVE MY CONSENT TO PARTICIPATE. A COPY OF THIS FORM HAS BEEN GIVEN TO ME FOR MY FUTURE REFERENCE.

_____ _____

Signature of Participant Date

Appendix B

Keith Hill [redacted] Sat, Jan 20, 1:42 AM

[redacted]

Dear Araya,
thank you for your interest in using the MFES in your research.

I am happy to provide your team with permission to utilise the MFES in your research. We do request that users of the MFES in research acknowledge the permission to use the tool in the following manner:

Permission to use the MFES was provided by the developers of the tool, from the National Ageing Research Institute in Melbourne Australia.

I have attached some information collated on the MFES in the period after it became available which describes some of the studies utilising it (though the MFES now has over 250 citations, so this is only a snapshot of the earlier related research that was summarised for a physiotherapy clinical outcomes manual in 2010).

Best wishes with your research,
Keith

Professor Keith Hill

PhD, Grad Dip Physio (Neuro), BAppSc(Physio)

Head, School of Physiotherapy and Exercise Science, Faculty of Health Sciences

Curtin University

Tel | [redacted]

Fax | [redacted]

Appendix C

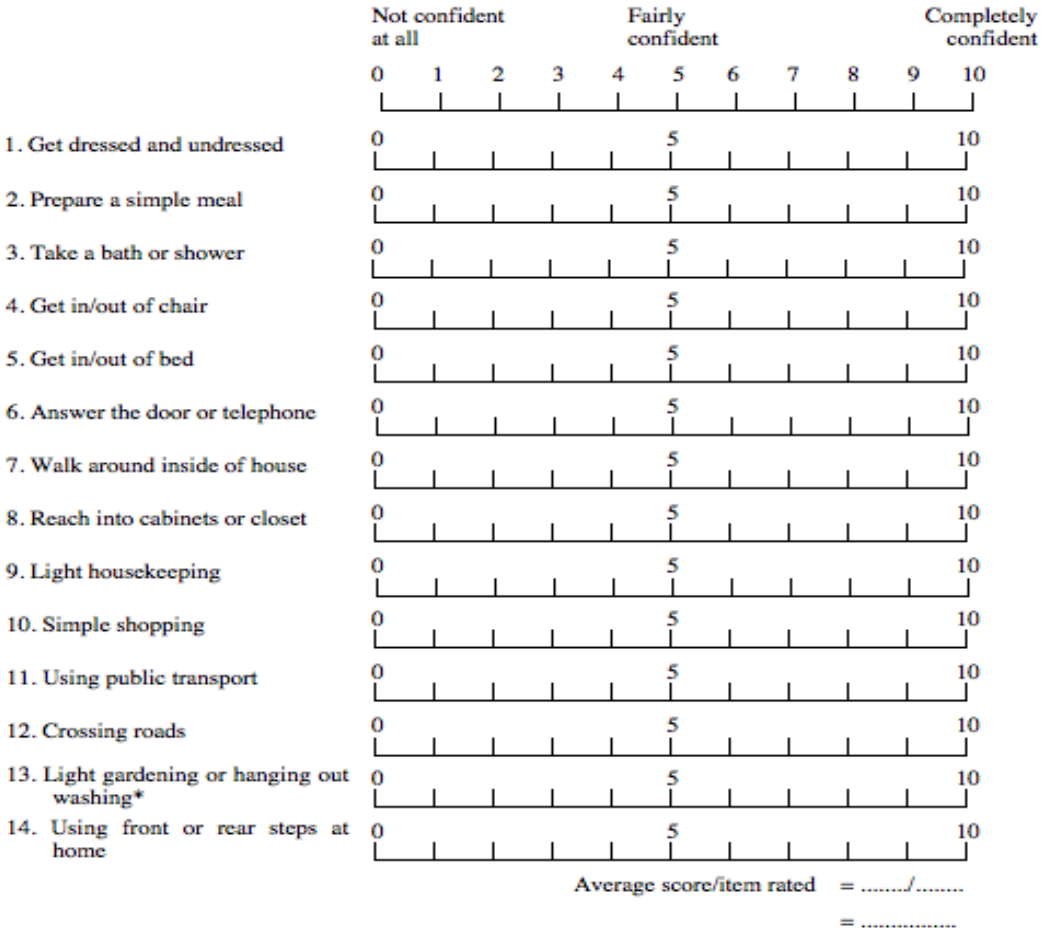
The Modified Falls Efficacy Scale

Adapted from Tinetti et al, 1990; Hill et al, 1996.

On a scale of 0 to 10, rank how confident are you that you can do each of these activities without falling, with 0 meaning 'not confident/not sure at all', 5 being 'fairly confident/fairly sure', and 10 being 'completely confident/completely sure'.

Note

- If you have stopped doing the activity at least partly because of being afraid of falling, score 0.
- If you have stopped an activity purely because of a physical problem, leave that item blank (these items are not included in the calculation of the average MFES score).
- If you do not currently do the activity for other reasons, please rate that item based on how you perceive you would rate if you had to do the activity today.



Average score/item rated = .../.....

= .....

* rate most commonly performed of these activities.

Appendix D

FACTS

- Have you had a fall in the past? If so, how long ago was that? How many falls?
    - Where did that take place?
- I see that you scored ____ (ask about number) in this area- can you tell me more about that?

HOW

- How does that impact your everyday activities?
    - Are there any activities you used to do that you now avoid or do differently?
    - What is it about (gardening, grocery shopping, etc.) that leads to the fear you have?
        - What part of that activity made you nervous or uncomfortable?
        - What do you do to manage that?
        - What did you do in that situation?
        - What do you plan to do in the future when you are doing that?
    - Are there other activities you now avoid or do differently?

WHEN

- When did this start happening / when did you first notice a change in your activity level?
- When was the last time you were doing an activity and you experienced a FOF?

WHY

- What is your experience of FOF?
- What do you think contributed to that feeling, or fall (condition vs. emotion)
    - Inquire about <u>emotions</u> and/or <u>conditions</u>

- Do you feel more vulnerable? How so?
- What frustrates you?

PREVENTION

- Is there anything that you are currently doing about fall prevention?
- What do you think will help?
    - I see you are taking classes, what about it do you like/dislike?

Appendix E

Do You Worry About Falling?

Falls Impact 1 out of 4 Older Adults

- The purpose of our study is to learn more about your experiences or concerns about falls.
- **If you or someone you know qualifies for this study, we would like to hear from you.**

Requirements

- 65 years or older
- Score 6 or lower on the following questionnaire
- Available for a *30 - minute* conversation about your experience with falls

What You Get Out of It

- Light refreshments will be provided
- All participants will be entered for a chance to win a $20 gift card to Peet's Coffee

Contact

Merit Franklin

Cell:

Email:

Fall prevention resources are avaialble upon request