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ORIGINAL ARTICLE

The Patterns of Activity, and Transport to Activities Among Older Adults in Singapore

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transportation;
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Abstract *Background:* Engagement in occupations is important, and appropriate transportation modes are necessary for continued activity participation in the community. The aim of this study was to explore the patterns of activity and transportation methods used by older adults and the links between their transport use and activity engagement in Singapore.

Methods: Fifty-six participants aged 50 years and older recorded in a time diary (in English or Mandarin) their activity participation over 24 hours on a weekday or weekend day. Data on the participants' out-of-home activities were analyzed using parametric statistics, including Student *t*-tests and analyses of variance, along with visual inspection of the data.

Results: No significant difference was found between time spent out of the house on weekdays and weekends on the variables of sex, age, and self-reported health status, and between living situation and time spent out of the house for drivers and nondrivers. The participants undertook a wide variety of activities including work, singing with friends, and shopping, and most frequently left their house to shop, exercise, or meet family/friends or participate in leisure activities. The participants were found to be able to use several transportation methods to access these activities, and they were satisfied with how they traveled to them.

Conclusion: This study contributes to the understanding of the activity engagement of older adults in Singapore. It has highlighted participants' engagement in neighborhood activities and the importance and preference to walk or use public transportation to access activities. Additionally, this study has highlighted the need to consider the issues surrounding occupational performance in older adults.

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Introduction

Engagement in occupation is assumed to be an essential part of living and a source of satisfaction for individuals, and has the potential to influence health and well-being (American Occupational Therapy Association [AOTA], 2008; Canadian Association of Occupational Therapists [CAOT], 2002; Kielhofner, 2002). Occupation-based theories are used to guide practice; the premise of these theories is based on the fundamental concept of the person-environment-occupation fit (Law et al., 1996; Strong et al., 1999), which is defined as the match between the skills and capabilities of a person, the demands of the occupations of everyday life, and environmental demands and resources (AOTA, 2005).

Consideration of environments and their influence on health and function is demonstrated through the International Classification of Functioning, Disability and Health (World Health Organization, 2001) and the AOTA Occupational Therapy Practice Framework, or AOTA-OTPF (AOTA, 2008). The AOTA-OTPF (AOTA, 2008) considers the promotion of health and participation through the intersecting relationship between the client, context and environment, and occupation, and this article uses the terminology provided within this framework.

The Person-Environment-Occupation (PEO) Model (Law et al., 1996) is also applied throughout this article. The PEO model incorporates the central role of the environment and provides a clear, broad framework for using the environment in occupational therapy practice (Rigby & Letts, 2003, pp. 17–32). Using the PEO model (Law et al., 1996) and the AOTA-OTPF (AOTA, 2008), occupational performance is viewed as the ability to travel using certain modes of transportation (travel mobility/driving), and in the context of this article, is the result of the interaction between the person (time use), the environment, and the occupation (activities) undertaken.

"Travel is a demand derived from the pursuit of activities" (Su & Bell, 2009, p. 46), and the literature contends that the purposes and motives for people's mobility should be explored (Kaiser, 2009). Mobility is necessary in old age to access people and places, with the associated benefits of obtaining goods and services that enhance quality of life (Metz, 2000). It is also necessary for access to local facilities and to engage in social activities (Banister & Bowling, 2004).

The Dutch National Travel Survey 1979-1994 provides a detailed description of people's travel behavior, time spent in activities, and dominant transportation modes and reasons for travel (Tacken, 1998). An analysis of these data from more than 45,000 participants showed that the number of trips made per day decreases with increasing age (Tacken, 1998). This study used a 1-day trip diary in which trips and activities were detailed. It found that work was an important part of daily life for persons aged 45 to 54 years, with travel involving an associated part of the time budget. Additionally, visiting friends or relatives and participating in recreation or sport, especially in the evenings, were significant activities for this age group.

For the adults aged 55 years and older, however, work was replaced by activities such as visiting, shopping, and

recreation including walking and sports activities during the day. In the evenings, walking and visiting friends or relatives were named the most important outdoor activities, and the older adults also commonly engaged in sports or other recreational activity (Tacken, 1998). Additionally, with age, trips by car were mainly replaced by walking trips and, to a small extent, by the use of public transportation. The limited use of public transportation might be justified by analyses of the distances covered, which found older adults traveling shorter distances and using walking more as a transportation mode. Another interesting finding from this study was the use of the bicycle over public transportation, even among the oldest group, who were aged 75 years and older (Tacken, 1998).

The National Household Transport Survey (Collia, Sharp, & Giesbrecht, 2003) conducted in the United States in 2001 also examined the trips, distances, and travel times of adults. In this study, the basic travel characteristics of older adults (aged 65 years and older) were compared with those of younger adults (aged 19 to 64 years) and it was revealed that older adults tended to be less mobile. The older adults, especially the older women, were also found to take fewer trips, travel shorter distances, and have shorter travel times. Although both older men and women took long-distance trips at about the same rate and had a strong preference for using personal vehicles, older women showed a clear preference for bus travel. Additionally, this study found that the older adults tended to suffer from self-reported medical conditions, which limited their travel (Collia et al., 2003).

Similarly, two Australian studies by Fricke and Unsworth (2001) and Stanley (1995), which also used time diary methodology, found that older adults with health problems tended to spend more time on personal care, passive leisure, and housework as they age. In the study by Fricke and Unsworth (2001), the participants who were aged 66 to 95 years and living in the community spent most of their time at home and alone, with nearly half the day being spent on instrumental activities of daily living (Fricke & Unsworth, 2001). Participants in this study indicated that the three most important tasks were use of the telephone, use of transportation (including driving), and reading.

Singapore is a highly urbanized country, considering the mobility and travel patterns of older adults there (Land Transport Authority [LTA], 2008). In addition to cars, a comprehensive public transportation system consisting of taxis, buses, and mass rapid and light rail transit services is available (LTA, 2009). The population in Singapore is aging, and it is forecast that by the year 2030 the ratio of persons aged 65 years and older will be 1:5 (Ministry of Community Development, 2006). Information on the mobility and travel patterns of people in Singapore can be obtained from the General Household Survey 2005 (Singapore Department of Statistics, 2009) and the Household Interview Travel Survey (Choi & Toh, 2010). However, information on the importance of specific activities to the individuals, or if trips were made using preferred modes of travel, is not provided. No published information was found on the mobility and travel patterns of older adults, in relation to their activities in Singapore, and this is of interest to

occupational therapists to promote client engagement in community-based occupations.

Time use methodologies are suitable for the collection of data on mobility and travel patterns of older adults. Several approaches are commonly used, including observation, experience sampling, and time diaries (McKenna, Broome, & Liddle, 2007). The benefits of using a time diary are that people are placed in their natural context as they engage in their daily activities (Farnworth, 2003) and activities can be measured and comparisons made between groups using the details about the activities in defined time periods (Chilvers, Corr, & Singlehurst, 2010). Although interviews and direct observation can also obtain rich time-use data (Chilvers et al., 2010), these approaches are more expensive and may alter participants' behavior due to their intrusive nature (Farnworth, 2003). Because time diaries have been shown to be a valid and reliable method of collecting self-reports of an individual's daily behavior (Robinson, 1999, pp. 47–90) and have been widely used in social research, by governments (Rosenbloom & Morris, 1998; Tacken, 1998), and successfully with women with musculoskeletal symptoms (Fong & Law, 2008), as well as with older people in occupational therapy research (Fricke & Unsworth, 2001; Stanley, 1995), the adoption of time diaries is supported in this study. The aim of this study is to describe the patterns of activity and transportation to activities among older adults in Singapore by (1) exploring older adults' time use out of the house on a weekend and weekday; (2) understanding the importance of activities to individuals; (3) investigating patterns of transportation to get to activities; (4) exploring which transportation methods are deemed best to get to activities; and (5) exploring the links between transportation use and engagement in activities.

Methods

Sample

Using convenience sampling, 56 participants were recruited through a family service center. Thirty-four participants aged 50 years and older were recruited in 2009. An additional 22 new participants were recruited in 2010 from the same location, this time collecting an additional record of a weekend day. Eight respondents completed time diaries at both data collection points. The time diaries were available in both English and Mandarin so that persons literate in either language were eligible to participate. Persons aged 50 years and older were included in this study so that participants who were still in the workforce could provide insight into the differences, if any, on their travel and mobility patterns, as compared with persons who were retired or not currently working.

Instruments

During the first phase of data collection, participants were required to record in a time diary their activity participation for 24 hours on a weekday. This was done in time blocks of 1 hour each. Recordings of the location

and importance of the activity to participants were also rated on this table, together with a column in which participants could detail if the transportation method used had been the best for them to access their activity, or suggest a preferred alternative. Basic demographic data relating to age, sex, and driving status were also collected.

To extend this study, details on educational levels, living environments, and health status were added to the investigation at the second data collection point. Self-reports of general health (including all elements of physical and psychologic health) on a visual analog scale are reliable to capture all elements of health status as previously discussed (Brazier, Roberts, Tsuchiya, & Busschbach, 2004; Luo, Johnson, Shaw, Feeny, & Coons, 2005; Rabin & Charro, 2001). Together with information collected during the first phase, participants in the second data collection also recorded their time use on a weekend day so that any differences in activity and time use on the weekend day or less frequently-occurring activities might be captured. At the end of each day recorded, the participants were also asked to comment on activities they were unable to participate in for reasons associated with transportation access. A summary of the data collection processes used is shown in Fig. 1.

Procedure

Ethical approval for this study was granted by the University Faculty Human Ethics Committee. The researcher met with participants, who were provided with instructions for this task, and consenting individuals were given copies of the time diary to complete at their convenience. Each participant was given a \$10 supermarket voucher as a token of appreciation for returning the time diary.

Data analysis

The Predictive Analysis Software (PASW, SPSS Inc., Chicago IL) version 18.0 was used for data management and analysis. The data recorded by the participants were extracted and categorized into codes. This article concentrates on the activity and travel patterns of older adults; therefore, only data on the out-of-home activities are reported. The activities were categorized based on coding systems from the Australian national database (Australian Bureau of Statistics, 1997) and previous research (Fricke & Unsworth, 2001), and aligned with the AOTA-OTPF (AOTA, 2008). The data were coded initially by the first author and then independently checked by the other authors.

In instances where participants recorded performing two or more activities in an hour-long block, the time taken for each activity was calculated to have been equally divided among all the activities recorded in that time period. The importance of each activity was taken to be the average of the recorded importance of that same activity over all the time that was spent doing that activity. The modes of transportation to get to each activity were also used in the analyses.

For all 56 participants, weekday time use data collected at both data collection points were analyzed collectively,

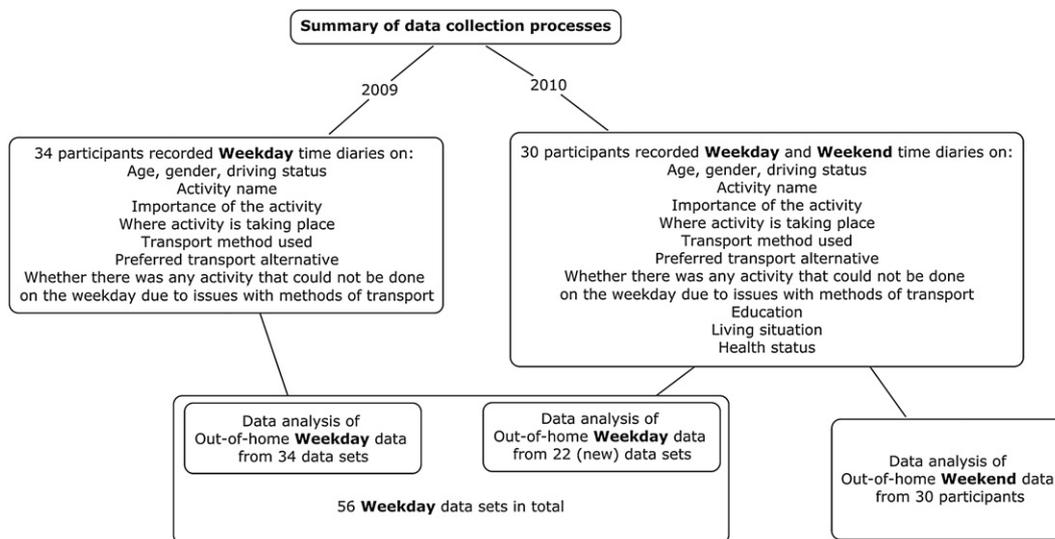


Figure 1 Flowchart of data collection processes.

and weekend time use data for the 30 participants were separately analyzed. Participant data are presented in groups of 10-year age increments, and means and standard deviations (SDs) for time spent in each category for participants were calculated. Frequencies and percentages were used to summarize the data, and associations between sex, health status, home situation, and driving status were examined in the analyses. The findings from a typical day were also presented to illustrate the data, which were

constructed by analysis of the mode (frequency) of the activities undertaken by the participants.

Results

The participants' demographics and time use (based on 1,440 minutes/day) are presented in Table 1. Eighteen men and 38 women ($n = 56$) aged 51-79 years, provided weekday time

Table 1 Participant Demographics

	Men, <i>n</i> (%)	Women, <i>n</i> (%)	Combined sample, <i>n</i> (%)
Sex (<i>n</i> = 56)	18 (32.1)	38 (67.9)	56 (100.0)
50-59	0	15 (26.8)	15 (26.8)
60-69	11 (19.6)	20 (35.7)	31 (55.3)
70-79	7 (12.5)	3 (5.4)	10 (17.9)
Current driver	6 (10.7)	2 (3.56)	8 (14.3)
Not currently driving	9 (16.1)	34 (60.7)	43 (76.8)
Sex (<i>n</i> = 30)	6 (20.0)	24 (80.0)	30 (100.0)
50-59	0	10 (34.5)	10 (34.5)
60-69	2 (6.9)	12 (41.4)	14 (48.3)
70-79	3 (10.3)	2 (6.9)	5 (17.2)
Current driver	1 (3.4)	2 (6.9)	3 (10.3)
Not currently driving	4 (13.8)	22 (75.9)	26 (89.7)
Education (<i>n</i> = 30)			
No formal education	1 (3.3)	5 (16.7)	6 (20.0)
Primary education	0	9 (30.0)	9 (30.0)
Secondary education	3 (10.0)	8 (26.7)	11 (36.7)
Post secondary to undergraduate	2 (6.7)	1 (3.3)	3 (10.0)
Postgraduate	0	1 (3.3)	1 (3.3)
Living situation (<i>n</i> = 30)			
Live alone	0	2 (6.7)	2 (6.7)
Live with spouse only	3 (10.0)	4 (13.3)	7 (23.3)
Live with spouse and others	2 (6.7)	11 (36.7)	13 (43.4)
Live with children only	1 (3.3)	6 (20.0)	7 (23.3)
Live with others only	0	1 (3.3)	1 (3.3)

use data (mean age = 63.32, SD = 6.65). Eight of these participants were current drivers and 43 reported that they were nondrivers. The remaining five did not provide a response to this question. Thirty participants (6 men and 24 women) aged 51-77 years (mean age = 62.66, SD = 6.86) provided weekend time use data. Additionally, they rated their health on a 10-cm scale (0 = poor to 10 = excellent), and their mean health was 5.64, SD = 2.68.

The participants' overall time use out of the house is summarized in Table 2. As the Kolmogorov-Smirnov test indicated normality, parametric statistics were used in the analyses of time spent out of the house. The mean difference in time spent out of the house on weekdays and weekends was found to be only 13.84 minutes, and the paired samples Student *t*-test showed no significant difference between weekdays and weekends, $t(29) = 0.314$, $p = 0.756$.

Next, participant data were divided into three groups according to age and a two-way analysis of variance (ANOVA) was used to determine if sex and age had an effect on time spent out of the home. These variables were selected because different roles and levels of activity participation may be attributable to sex and age differences, which consequently may lead to differences in time spent in activities out of the home. The interaction effect between age and sex was not statistically significant: $F(1, 51) = 0.66$, $p = 0.42$ for weekday, and $F(1, 24) = 1.22$, $p = 0.28$ for the weekend day. This shows that men and women did not differ in terms of the amount of time spent out of the house, and there were no differences in terms of age and time spent out of the house on either day. The effect of the participants' ages on self-reported health was also investigated using a one-way ANOVA, and no significant difference was found: $F(2, 26) = 2.66$, $p = 0.09$.

Additionally, a two-way ANOVA was conducted to determine if driver status (if the participants were currently driving) and living situation had an effect on time spent out of the home. Participants were divided into five groups according to their living situation. The interaction effect between driver status and living situation was not statistically significant, and the results were $F(2, 21) = 1.10$, $p = 0.35$ for the weekday, and $F(2, 21) = 3.23$, $p = 0.06$ for the weekend day. This shows that drivers and nondrivers did not differ in their time spent out of the house, and there were no differences in living situation and time spent out of the house on either day.

The mean time spent in each activity category and the ratings of their importance are summarized in Table 3. Because there were several instances in which the leisure activity performed overlapped with the meeting of family/friends, the category was coded as "meeting family/friends and going to leisure activities." Other responses in this category included "visiting parents or grandchildren" and "having meals with friends." The category "caring for others" referred to the recorded activities of "taking grandchildren to the playground" and "caring for family members." Engagement in volunteer work was placed in a separate category rather than as combined with the "work" or "care for others" categories to distinguish between paid and volunteer work.

The mode of transportation used for activity participation is summarized in Table 4. This table depicts the number of times each transportation method was used by the participants to get to various activities. Shopping, exercising and meeting family, friends or participation in leisure were the three most frequent reasons for participants leaving their house on both weekdays and weekends.

Each person made an average of 2.86 trips on the weekday, and 2.47 trips on the weekend using private and public transportation or on foot. Taken collectively (with walking excluded), public transportation was the preferred transportation method used on both weekdays and weekends. Driving made up 22.2% of the weekday trips and 17.1% of the weekend trips with walking excluded, whereas public transportation and walking made up 83.8% and 87.8% of the weekday and weekend trips, respectively. The participants were mostly satisfied with the transportation methods they used, with most stating that the option to record "if you didn't like how you got here, what would be better" was not applicable to them.

Finally, the links between transportation use and engagement in activities were explored. Most participants stated that there was no activity they could not do on the weekday or in general because of transportation-related problems. The participants generally walked or took public transportation such as the bus or mass rapid transit to access shops and activity venues (only a small number used personal vehicles), and they usually spent time in singing sessions, chatting with friends/neighbors, or looking after grandchildren or elderly parents.

Table 2 Average Time Spent Out of the House

	Men, mean (s)	Women, mean (s)	Combined sample, mean (s)
Weekday ($n = 56$) Time out of the house			
Range: 60 – 960 min	367.50 (207.99)	410.53 (213.17)	396.70 (210.60)
50-59	0	448.00 (231.12)	448.00 (231.12)
60-69	370.91 (236.71)	405.00 (205.90)	392.90 (241.01)
70-79	362.14 (170.68)	260.00 (138.56)	331.50 (161.63)
Weekend ($n = 30$) Time out of the house			
Range: 0-780 min	240.00 (120.00)	389.58 (189.95)	363.79 (187.09)
50-59	0	360.00 (160.00)	360.00 (160.00)
60-69	150.00 (42.43)	424.17 (227.14)	385.00 (231.74)
70-79	300.00 (120.00)	330.00 (42.43)	312.00 (88.99)

Table 3 Time Spent in Activities Out of the House, and the Importance of These Activities, From Most to Least Time Spent

	<i>n</i> (%)	Mean time, (s)/(range)	Mean importance (max 10)
Work Weekday (<i>n</i> = 56)	10 (17.9)	366.00 (179.89)/(120-600)	8.33 for <i>n</i> = 10
Weekend (<i>n</i> = 30)	4 (13.3)	435.00 (185.74)/180-600	8.88
Volunteer work	5 (8.9)	252.00 (213.82)/(60-600)	8.12 for <i>n</i> = 5
Reading downstairs at void deck	1 (1.8)	180	9.5
Going for massage	1 (1.8)	180	8.8
Meeting family or friends/going to leisure activity Weekday (<i>n</i> = 56)	23 (41.1)	176.09 (95.00)/(60-360)	6.57 for <i>n</i> = 21
Weekend (<i>n</i> = 30)	13 (43.3)	173.08 (118.84)/ 60-480	7.26
Religious/spiritual activities Weekday (<i>n</i> = 56)	9 (16.1)	174.38 (39.23)/(120-240)	8.81 for <i>n</i> = 8
Weekend (<i>n</i> = 30)	8 (26.7)	240.00 (150.43)/60-540	9.05
Caring for others Weekday (<i>n</i> = 56)	7 (12.5)	137.14 (132.88)/(60-360)	8.68 for <i>n</i> = 6
Weekend (<i>n</i> = 30)	3 (10.0)	120.00 (60.00)/60-180	8.67
Shopping Weekday (<i>n</i> = 56)	36 (64.3)	118.33 (61.25)/(60-240)	7.59 for <i>n</i> = 34
Weekend (<i>n</i> = 30)	22 (73.3)	130.91 (84.12)/60-360	6.94
Exercising Weekday (<i>n</i> = 56)	33 (58.9)	108.79 (53.61)/(60-240)	8.73 for <i>n</i> = 31
Weekend (<i>n</i> = 30)	17 (56.7)	116.47 (44.85)/60-180	7.77
Accessing healthcare Weekday (<i>n</i> = 56)	24 (42.9)	105.00 (47.64)/(60-240)	7.57 for <i>n</i> = 22
Weekend (<i>n</i> = 30)	1 (3.3)	60.00/60	8.80
Attending class	3 (5.4)	70.00 (45.83)/(30-120)	9.80 for <i>n</i> = 2

Discussion

Overall, the day of the week, age, sex, living situation, and driver status did not indicate significant differences in time spent out of the house for the participants. There was no statistically significant difference in the time spent out of the house on the weekday or weekend day. Perhaps this might be because most of the participants were not working, and hence they were not restricted by day or time to engage in activities out of the house. The results of this study contrast those of the Dutch National Travel Survey, which found that work was an important part of daily life for participants aged 45-54 years, with travel involving an associated part of the time budget and the number of trips made per day decreasing with age (Tacken, 1998).

Similarly, the National Household Transport Survey (Collia et al., 2003) revealed that older adults, especially older women, tended to be less mobile, took fewer trips, traveled shorter distances, and had shorter travel times (Collia et al., 2003). Research on older adults with health problems in Australia has also found that they spend more time on personal care, passive leisure activities, and housework as they age (Fricke & Unsworth, 2001; Stanley, 1995). In contrast to other studies, the current research found no significant difference in time spent out of the house for older participants compared with those who were younger. Additionally, because the participants continued to actively engage in their communities and reportedly had a positive health status, this may support the assertion in occupational therapy literature that engagement in occupation has the potential to influence health and well-being (AOTA, 2008; CAOT, 2002; Kielhofner, 2002). Hence, occupational therapists should continue to promote older people's engagement in everyday activities to support their health and participation (AOTA, 2008; Law et al., 1996).

The importance of each activity category was also investigated in this study. The overall range for the mean importance, on a scale of 1 to 10, of all the activities performed was 6.57 - 9.80. Other time use studies have classified activities performed as "necessary, enjoyable, and personal" (Chilvers et al., 2010, p. 26). However, investigating the importance of activities compared with time engaged in these activities was novel in the current study.

Only a few of the participants had spent most of their weekday time at home, and hence did not use any form of transportation at all. Overall, most of the participants had spent time out of their home, and stated that they were satisfied with the transportation methods they had used, with most of them using public transportation methods to access activities and fulfill their needs. Only one nondriver stated that she would prefer to drive, and three drivers stated that they would prefer to use public transportation instead of their personal vehicles. This is in contrast with results from the United States, where both older men and women were found to go on long-distance trips at about the same rate, with a strong preference for using personal vehicles, and only older women showing a clear preference for bus travel (Collia et al., 2003).

Implications for occupational therapy practice

In line with the PEO model (Law et al., 1996) and the AOTA-OTPF (AOTA, 2008), this study has explored the relationship between the person, environment, and occupation and considered the occupational engagement and performance of older adults. Additionally, the transportation methods used by older adults to access their activities to fulfill their roles and needs were examined. These results confirm assertions from the PEO model, which state that occupational engagement can only be achieved if client factors, activity demands, performance skills, environmental contexts, and collaboration

Table 4 Patterns of Transportation Used for Activity Participation Out of Home, Presented in Order of Most Frequently Performed Activity

Activity/transportation methods	Bus		Bus & MRT		MRT		Taxi		Own vehicle		Passenger		Walk		Total	
	n = 56	n = 30	n = 56	n = 30	n = 56	n = 30	n = 56	n = 30	n = 56	n = 30	n = 56	n = 30	n = 56	n = 30	n = 56	n = 30
Going to shops	5	4	2	2	7	3	1		5	3	1	1	20	12	40	25
Exercising	2	1	1						1	1	1	1	28	15	33	18
Meeting family/friends or leisure activity	7	3	5	5	3				5	1	3		7	3	27	15
Accessing healthcare	5		3						1		1		12	1	22	1
Work	3	1	3	1	4	1			2	1			2	1	12	4
Religious/spiritual activities	2	2	2	2	2	2	2		3	1			1	1	10	8
Caring for others	3		1	1	1	1			1	1			2	1	7	3
Volunteer work	3								1		1		1		5	
Attend class	2				1										3	
Massage									1						1	
Total	32	11	14	11	15	10	3	—	20	7	6	2	70	33	160	74

Note. MRT = mass rapid transit (train) network.

between practitioner and client are considered and supported in the processes of evaluation and intervention in occupational therapy practice with clients (AOTA, 2008; Law et al., 1996).

The findings of this study have several implications for occupational therapy practice. First, they maintain the importance of considering and understanding older adults' occupational needs, roles, and engagement. Second, they provide insight into the transportation methods used by older adults to participate in activities, highlighting the need to consider the availability and feasibility of continued use of these transportation methods for older adults. Finally, this study highlights the need to consider each person's unique occupational performance, to ensure that they are supported in their continued activity participation for their maintenance of health and well-being (AOTA, 2008; Clark et al., 1997).

Limitations and directions for future research

This study was exploratory and difficulties were encountered recruiting men aged 50 to 59 years and adults in their 80s and older, and this may limit understanding of the activities and travel patterns of older adults. The overall small study size may have influenced the ability to detect differences between subgroups and the precision of the results in the analyses. For instance, time spent out of the house distributed by sex and age could not be analyzed to determine if differences between groups were significant due to the small sample.

Limitations were also encountered using time-diary methodology. When two or more activities were recorded in an hour slot, the time spent in each activity was taken to have been equal among the various activities in the analyses. Although a benefit of using this method was that the participants liked the nonintrusive nature of the data collection, a lack of detail in the self-recording of activities could have affected the quality of the data. Despite these limitations, time diaries enable an accurate record of both frequency and duration of each activity and allow the record of multiple activities (Harvey, 1999, pp. 19–45; Robinson, 1999, pp. 47–90). Hence, using this method has served the purposes set out in this research and enabled a description of the activity and travel patterns of older adults to be obtained.

Future research might use a combination of methodologies or a telephone/face-to-face interview as follow-up with the participants to more deeply examine the complex relationship between their chosen activities, environments, contexts, and transportation use. Additionally, it would be useful for future studies to be conducted with a larger sample or to compare participant responses from other countries to gain a more comprehensive understanding of the time use, activity, and travel patterns and to improve generalizability of the findings. Recruitment of persons living in the community in advanced age (80s and 90s) may also be helpful to provide a more comprehensive understanding of the activity and travel patterns of a spectrum of older adults.

Conclusion

This study has contributed to our understanding of the time use, activity engagements, and importance, as well as the

transportation methods preferred and commonly used, by older adults in Singapore. The findings suggest that these older adults engage in a range of activities; therefore, occupational therapists working with this demographic should consider each person's unique occupational performance so that they can use appropriate transportation methods to participate in activities. Additionally, the importance associated with the activities and time spent in them can be considered to optimize activity performance, health, and well-being in older clients.

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