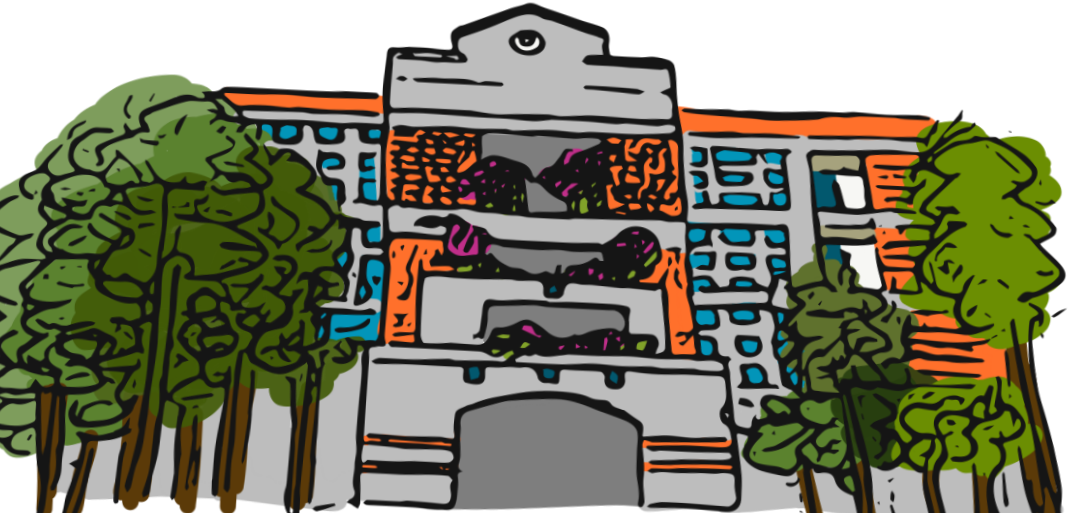
Longitudinal investigation of environment profiles, transition in social participation patterns and depressive symptoms in older adults with disabilities



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Environment patterns and mental health of older adults in long-term care facilities: the role of activity profiles

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ABSTRACT

Objectives: This study adopts the International Classification of Functioning, Disability and Health (ICF) model to determine extent to which the clustered patterns of long-term care (LTC) environment and activity participation are associated with older residents' mental health.

Method: This study enrolled a stratified equal probability sample of 634 older residents in 155 LTC institutions in Taiwan. Latent profile analysis and latent class analysis were conducted to explore the profiles for environment and activity participation. Multilevel modeling was performed to elucidate the hypothesized relationships.

Results: Three environment profiles (Low-, Moderate-, and High-Support Environment) based on physical, social, and attitudinal environment domains and two activity profiles (Low- and High-Activity Participation) across seven activity domains were identified. Compared to the Low-Support class, older adults in the Moderate- and High-Support Environment classes had better mental health. Older residents in those two classes were more likely to be in the "High Activity Participation" class, which in turn, exhibited better mental health.

Conclusion: Environment and activity participation directly relate to older residents' mental health. Activity participation also mediates the link between environment and mental health. A combination of enhanced physical, social, and attitudinal environments, and continual engagement in various activities may optimize older LTC residents' mental health.

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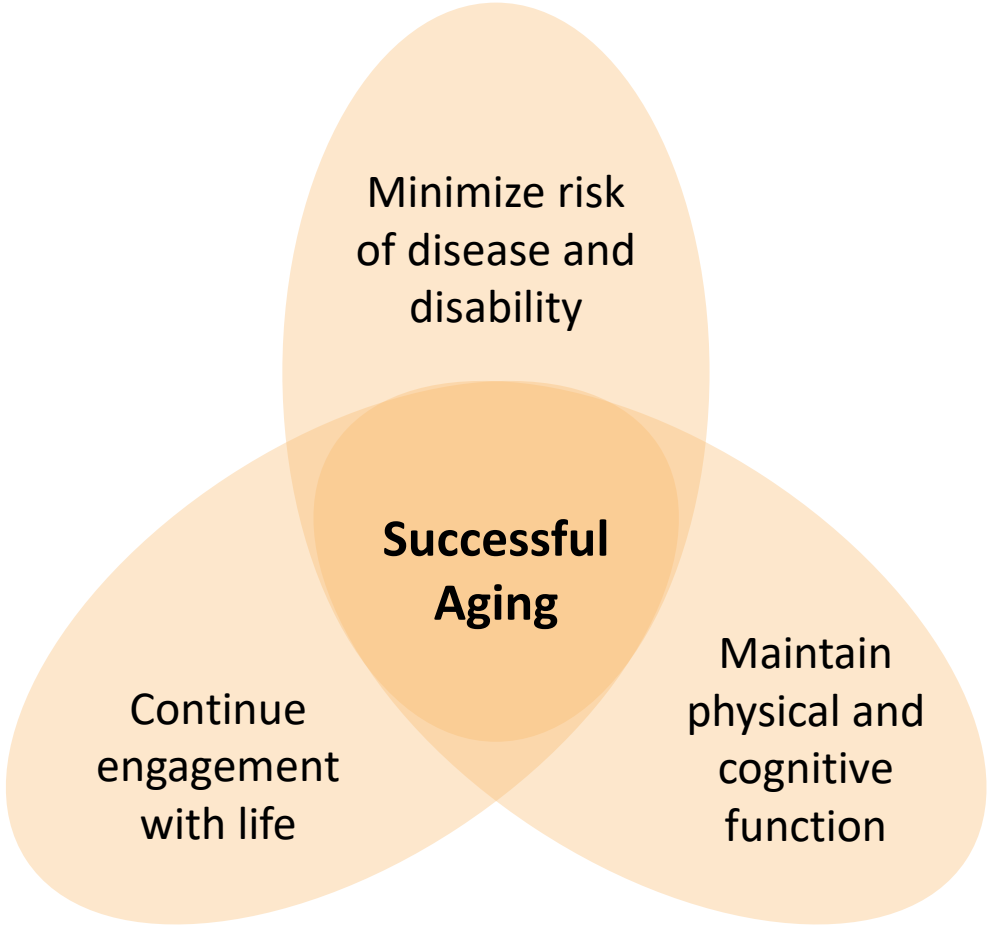
KEYWORDS
Functional disability; depressive symptoms; morale; latent profile analysis; latent class analysis

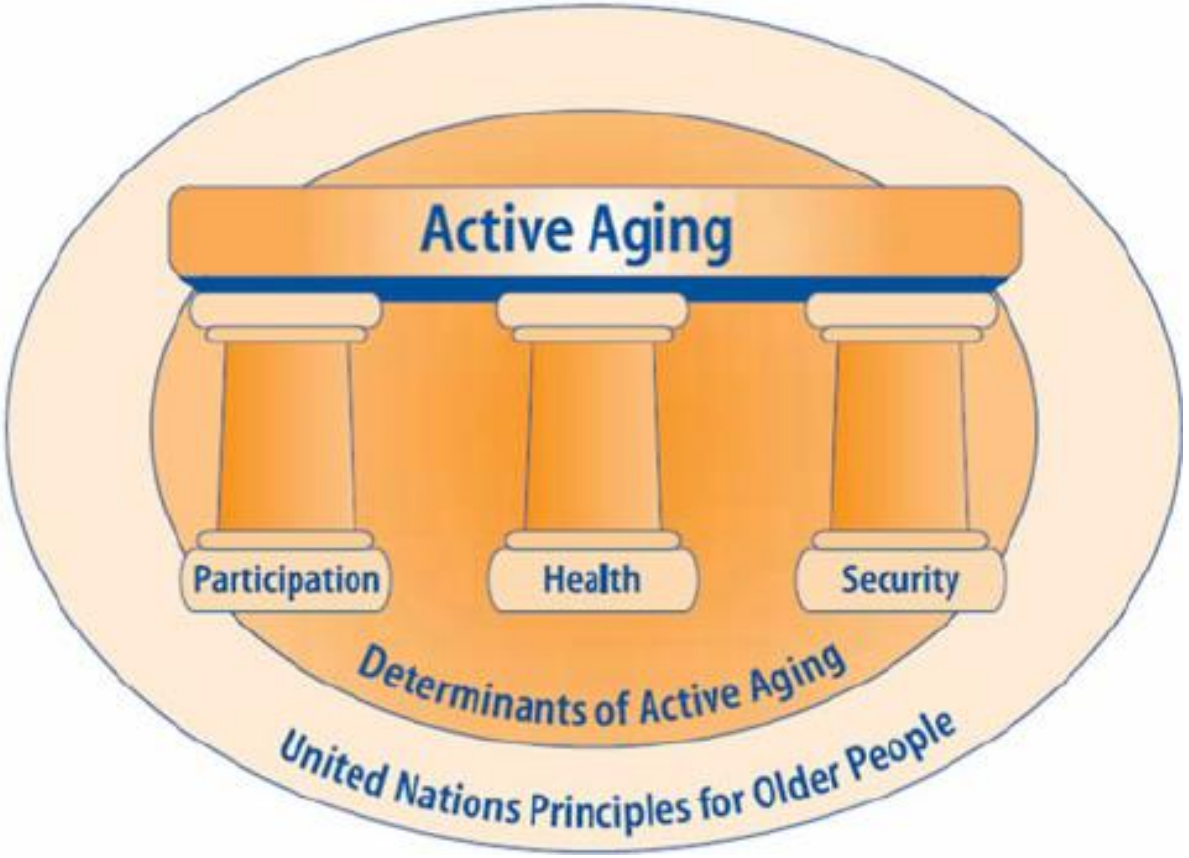
When Gerontologists Meet Disability

Successful Aging Framework



Source: Rowe & Kahn (1997)

Active Aging Framework



Source: WHO(2002), p. 45

In gerontology literature

- Social participation (SP) commonly refers to the involvement in activities that occur among individuals both in small societies and in large societies and can foster interaction with others outside the home.

- Older individuals who successfully continue their habits, preferences, lifestyle, and relationship in midlife can produce continuity in inner psychological characteristics, external social behavior and social circumstances, thus contributing to better physical and mental health (Atchley, 1989).

older

disabled

SP↓

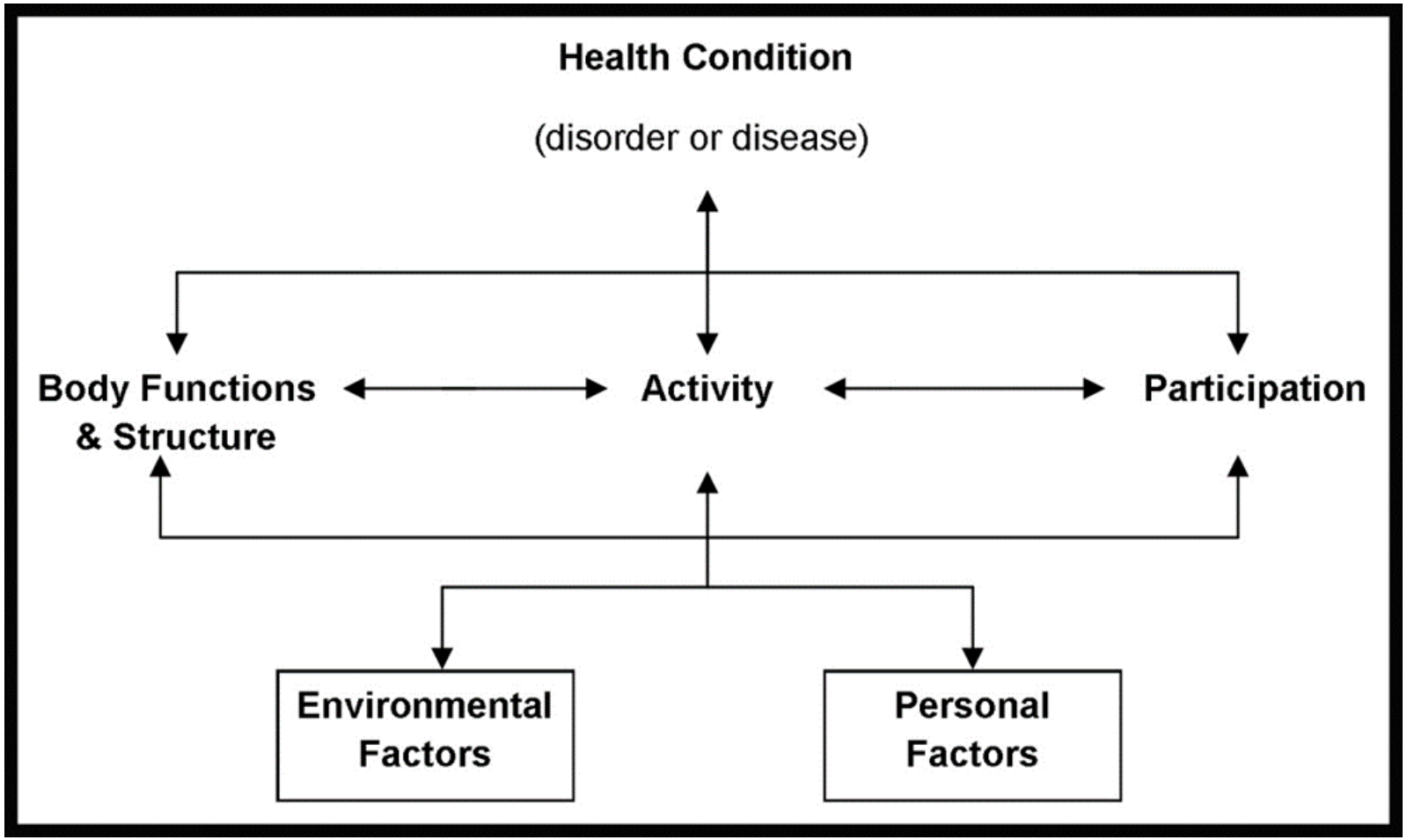
SP
decrease

aging unsuccessfully

aging inactively

gerontology + disability perspectives =

ICF Framework



Source: WHO(2002), p. 9

In the field of disability

- SP has been expanded beyond the scope the activity participation and social interaction.
- The ICF defines participation as an individual's involvement in life situations and an outcome of interaction among an individual's body functions, body structures, ability to execute a task or action and his/her personal and environmental factors (World Health Organization, 2002).
- Participation mainly considers actions and behaviors that a person performs in his/her life context.
- SP emphasizes the accomplishment in preferred activities and social roles valued by the individual and his/her cultural and social environment (Desrosiers, Noreau, & Rochette, 2004; Eyssen, Steultjens, Dekker, & Terwee, 2011).

2018 Senior Citizen Condition Survey data in Taiwan

13.03%

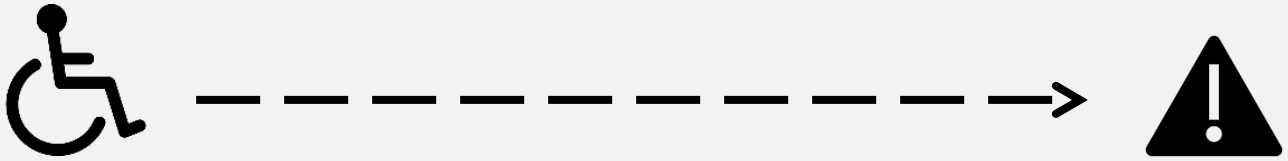
of adults aged 65 years and older had difficulty performing at least one activities of daily living (ADL).

28.08%

of them reported at least one problem with instrumental activities of daily living (IADL).

The prevalence of having ADL or IADL difficulties increased with age.

Assumptions



Increased severity of impairment or disability

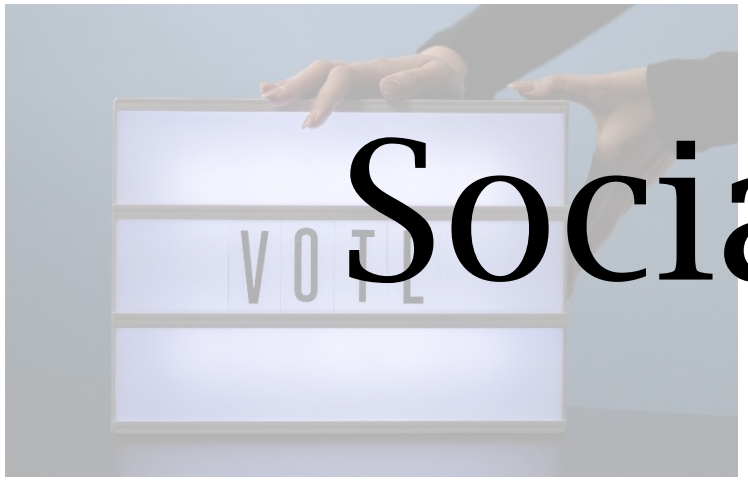
more disruptions in SP

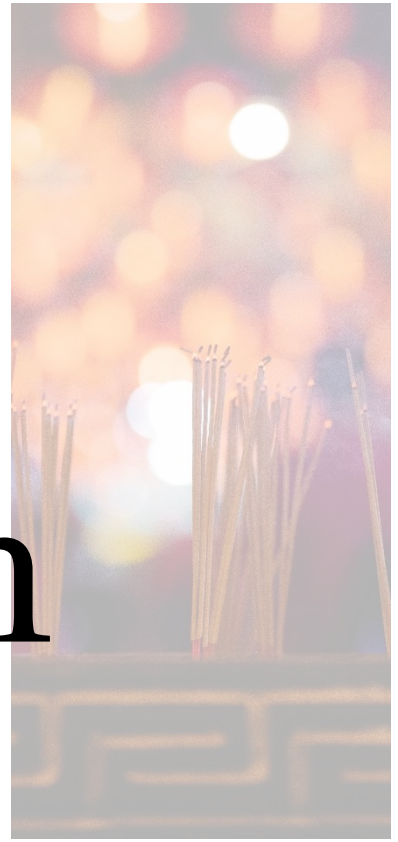
Disabled older adults valued social activities than other activities such as ADL or IADL, but expressed more unmet needs in outdoor social activities (Turcotte et al., 2015).

- Disability is inevitable and mostly irreversible.
- Optimizing SP offers a modifiable opportunity to mitigate the impact of disability on mental health.

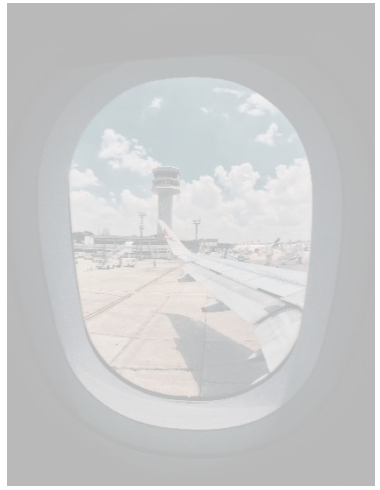

Where should we start?

Frequency





Social Participation ?



Quantity

Social Participation

SP has been operationalized and measured differently in prior studies.

Examples

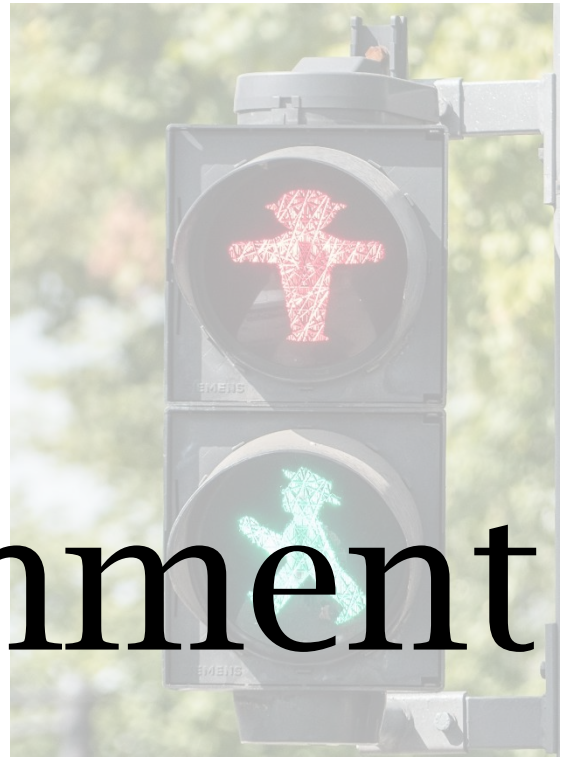
"leisure activities, outside activities, leisure-time physical activities, social activities, economic activities, participation in social groups, and community participation" (Dahan-Oliel et al., 2008).

"12 categories comprised of 69 life habits, ranging from personal care to recreation activities"(Levasseur et al., 2004).

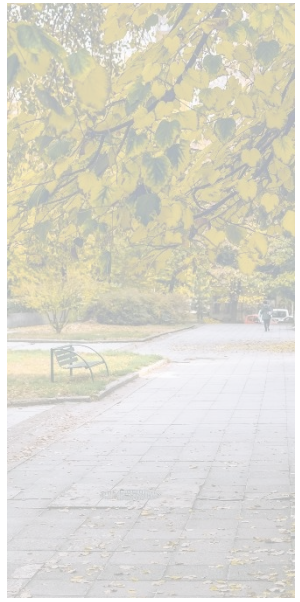
The inconsistency in typology and measurement in SP has made the results from earlier studies difficult to compare.

Objective

Environment ?



Subjective



Environment

- The ICF model assumes that environment is composed of barriers or facilitators in physical, social, and attitudinal domains.
- Disabled older adults experience more environment barriers. These barriers restrict their social engagement (Vaughan, LaValley, AlHeresh, & Keysor, 2016).
- Most existing literature only considers certain aspect of environment and its influence on the participation of certain type of activities.

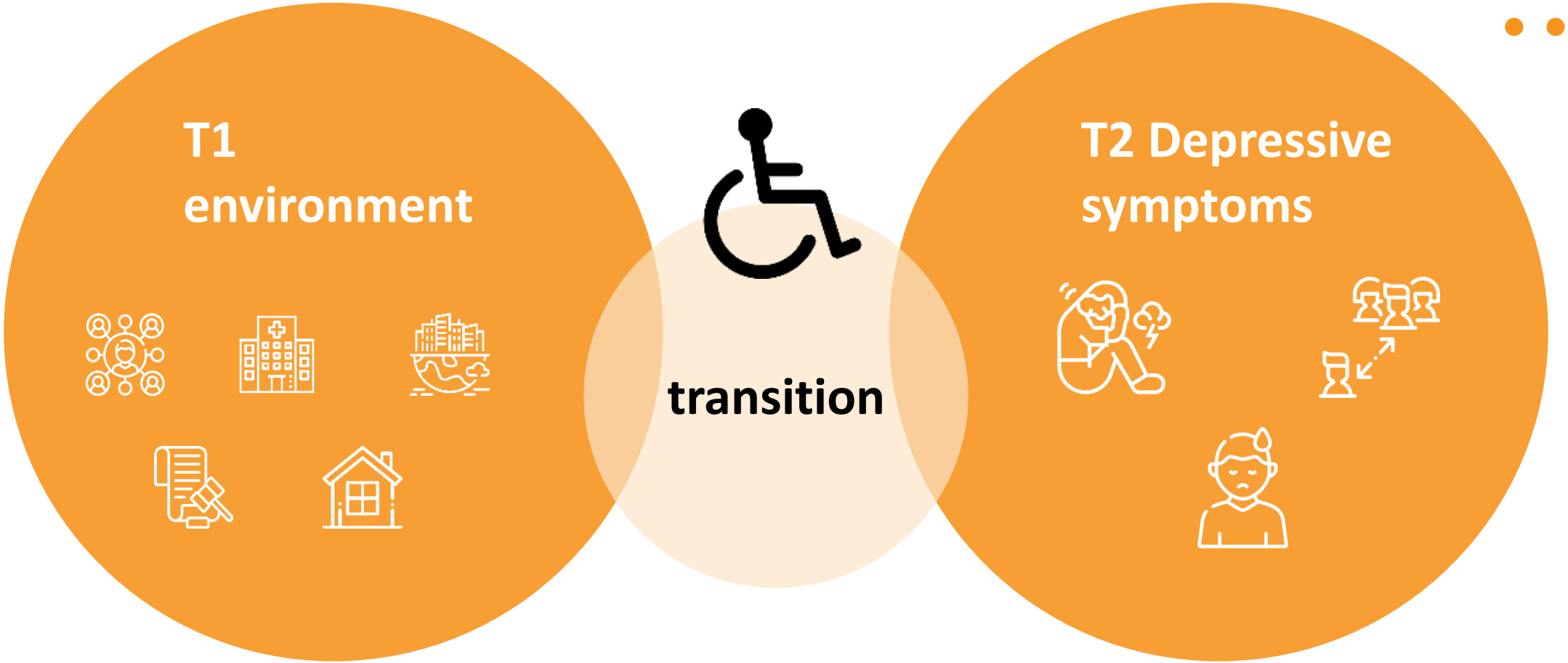
Examples

” street conditions, safety and neighborhood deprivation in community → incident of mobility disability” (Rosenberg et al., 2011).

” Outdoor built environment (e.g., curb ramps or street lights) →physical activity“ (Rosenberg, Huang, Simonovich, & Belza, 2013)

Why this study important?

- Very little attention has been paid to the SP of older persons with disabilities.
- Only a handful of empirical studies have investigated how environment affect the SP of community-dwelling older individuals with disabilities.
- The coexistence of interrelated layers, dimensions and patterns of varied aspects of environment is not considered.
- No study has yet simultaneously examine how environment profiles are related to SP profiles and depressive symptoms among disabled older persons residing in community.
- Longitudinal associations among environment profiles, SP profiles and the subsequent mental health outcomes is still absent from the literature.


T1
environment
transition
T2 Depressive
symptoms

Hypotheses

> For disabled community-dwelling older adults

- What environment and SP profiles exist?

- How environment and SP profiles associate with depressive symptoms?

- What are the longitudinal associations among environment profiles, change in SP profile memberships between waves, and depressive symptoms?

This study

Sample

- **Recruitment criteria:**
  - aged 60 or over
  - lived in current community for over three months
  - able to understand and answer survey questions
  - unable to perform at least one of the ADLs or IADLs

- **T1: April to July 2018**
- **T2: April to July 2020**

- Quota sampling at the T1 survey, using the sampling procedures for national representative surveys developed by the Academic Sinica in Taiwan.

- 358 townships in six municipalities, 16 counties and six cities were stratified into 19 geographical strata.

- The distribution of participants in each geographical stratum and municipality, county or city mirrored the population.

For the 483 dropped-outs

- 17.88% refused to participate the follow-up study lost contact, or had moved away
- 10.12% had passed away
- 5.86% have been placed into long-term care facilities
- 2.89% were so degenerated so unable to comprehend questions

Environment factors

- 16 questions modified from the Craig Hospital Inventory of Environmental Factors (Harrison-Felix, 2001)

- Factored into 5 environmental domains:

Physical environment

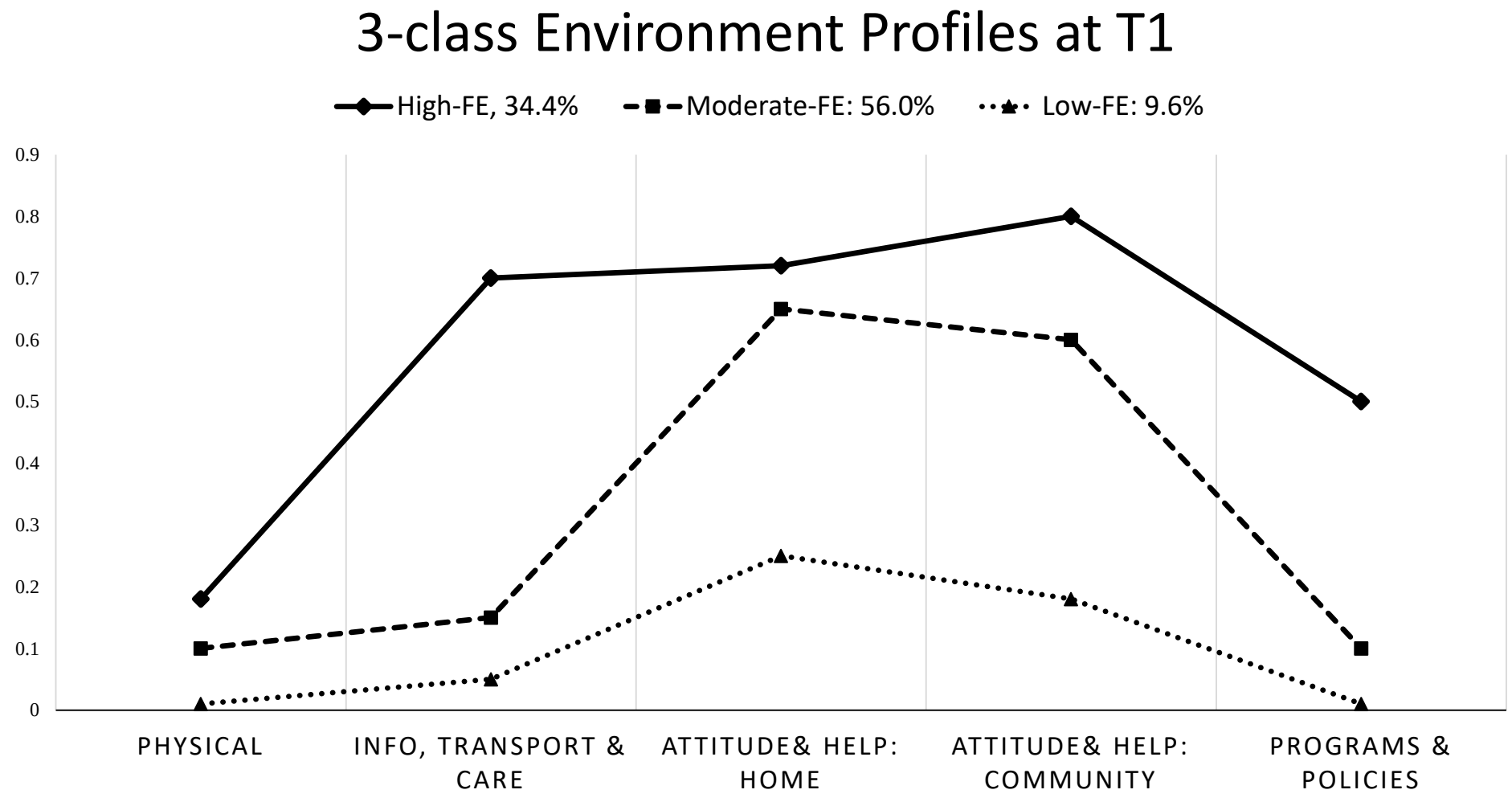
Information, transportation & medical care

Attitude & Help: Family

Attitude & Help: Community

Programs & Policies

T1 Environment Profiles-LCA



SP Measurement

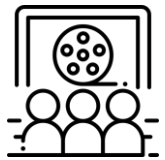
10 activities from social role dimension in the disability component of Late-Life Functional and Disability Instrument (Late-Life FDI) (Jette et al., 2002).


Visit others


Volunteering


Invite others to home


Group activity

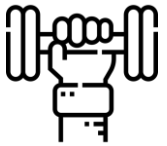

Go out with others


Religious activity


Travel


Active leisure

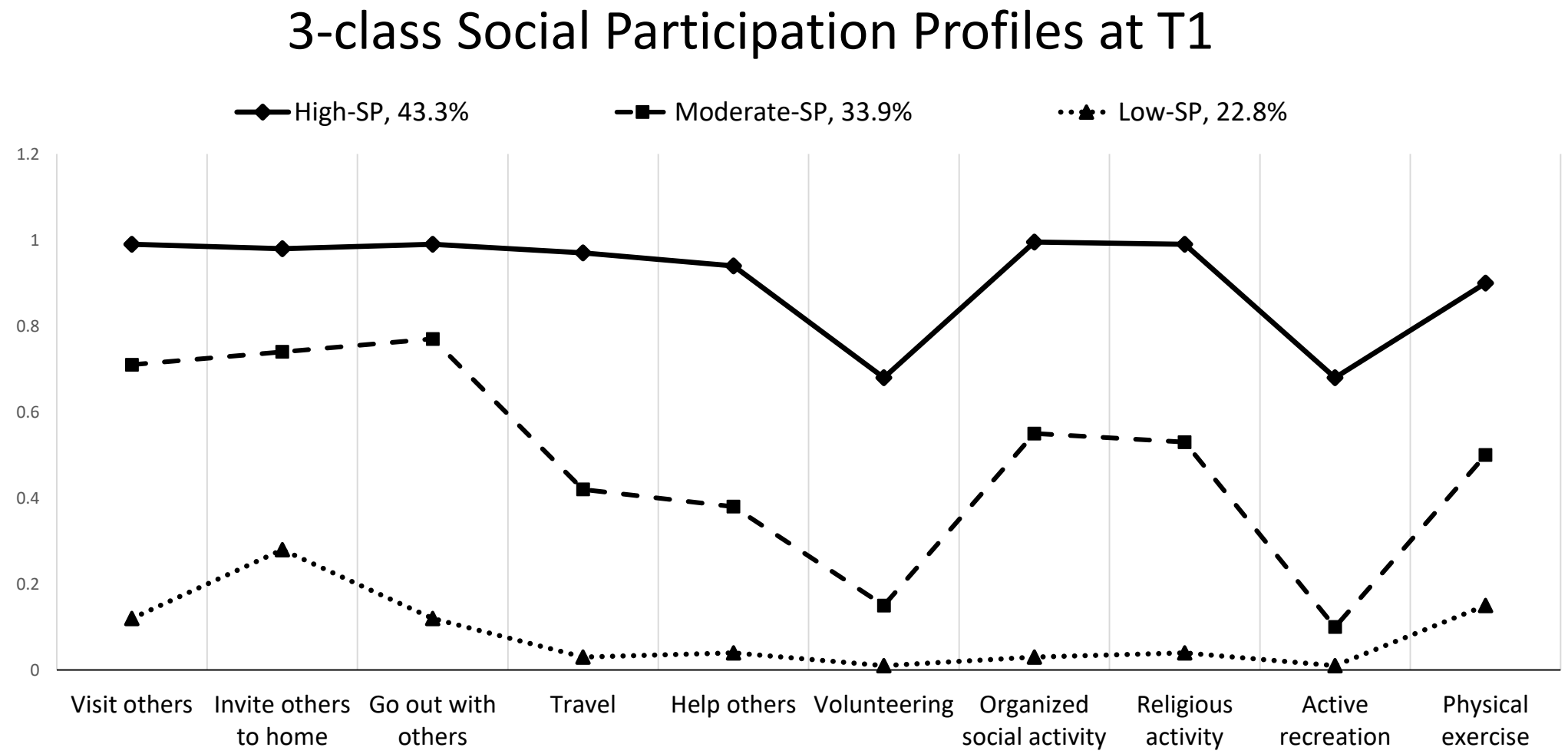

Help others


Physical exercise

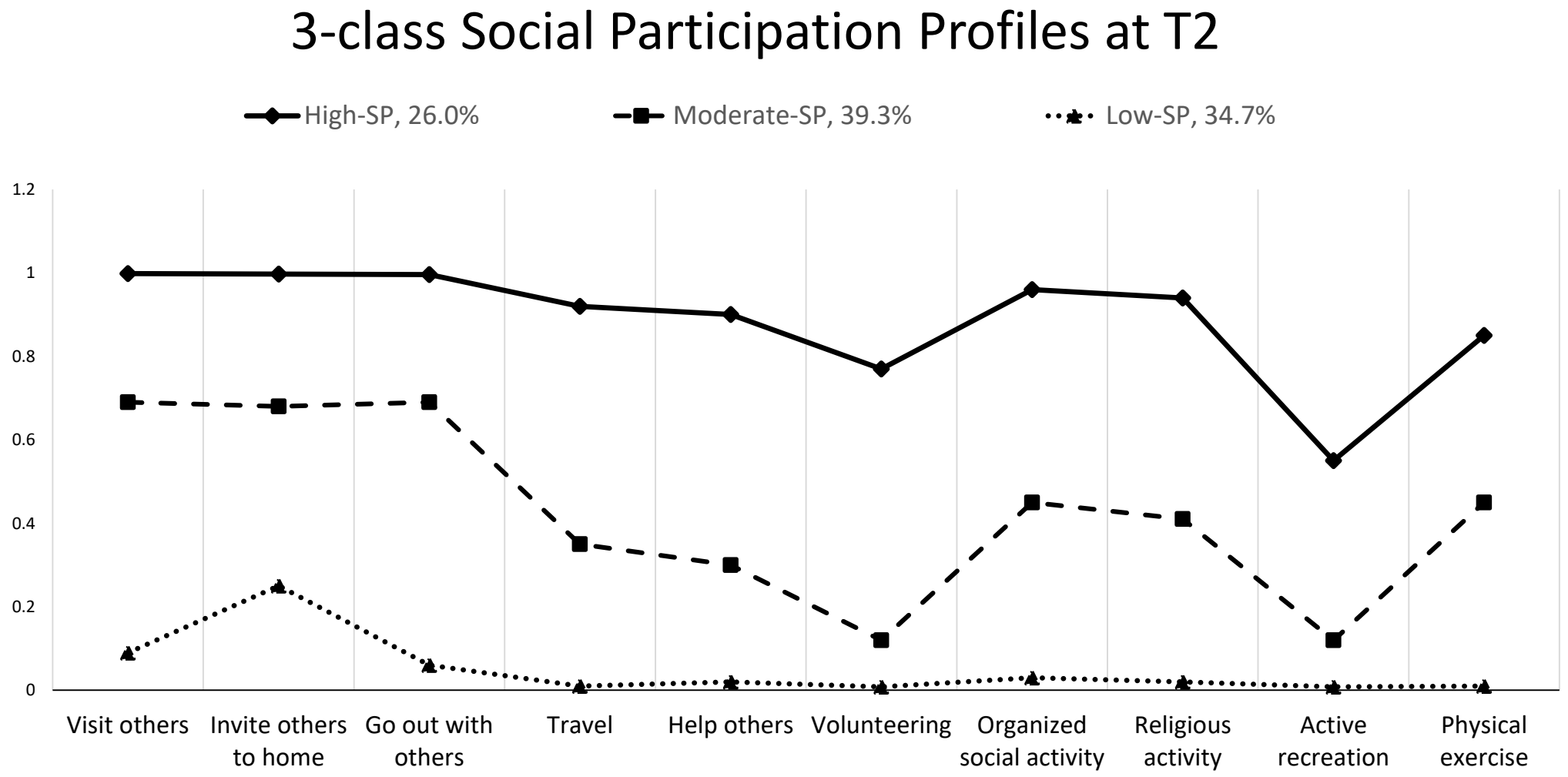
Prevalence of SP by Wave

Social Participation	Total (N=1,314)	T1 With f/u (N=830)	T2 (N=830)
Visit others	52.7%	57.6%	53.3%
Invite others to home	60.0%	64.0%	58.0%*
Go out with others	53.8%	58.2%	51.7%**
Travel	36.8%	40.7%	36.3%
Help others	33.9%	37.6%	34.5%
Volunteering	19.8%	22.9%	23.4%
Group activity	43.8%	47.7%	43.6%
Religious activity	43.0%	46.5%	40.1%**
Active leisure	18.7%	20.5%	18.3%
Physical exercise	45.3%	50.8%	39.9%***

T1 SP Profiles-LCA



T2 SP Profiles-LCA



T1 → T2 SP Transition Patterns-LTA

- Transition probabilities on SP profiles from T1 to T2 (LTA: Invariance Model)

T1 \ T2	Low SP	Moderate SP	High SP
Low SP	**0.690**	0.229	0.081
Moderate SP	0.135	**0.539**	0.326
High SP	0.027	0.188	**0.785**

T1 Environment Profiles vs. Change in SP Profile Membership

T1 Environment Profile (ref. Low-FE)	T1 to T2 SP change	OR
High-FE	Low → Low	.236***
Moderate-FE		.673
High-FE	Moderate → Moderate	3.073*
Moderate-FE		2.570
High-FE	High → Low	.413
Moderate-FE		.153**
High-FE	High → Moderate	1.193
Moderate-FE		.561
High-FE	High → High	4.669**
Moderate-FE		1.831

T1 Environment profiles, SP profiles vs. T1 depressive symptoms

	T1 High-SP (ref. Low-SP)	T1 Moderate-SP (ref. Low-SP)	T1 Depressive symptoms	
T1 Environment Profiles (ref. Low-FE)	OR (SE)	OR (SE)	b (SE)	b (SE)
- Moderate-FE	0.771 (0.316)	1.799 (0.528)*	-2.752(.635)***	-2.689(.624)***
- High-FE	3.667 (1.566)**	3.410 (1.075)***	-3.933(.675)***	-3.323 (.668)***
T1 Social Participation Profiles (ref. low-SP)				
- Moderate-SP	-	-		-2.021(.424)***
- High-SP	-	-		-3.786(.521)***

T1 Environment profiles, changes in SP profiles vs. T2 depressive symptoms

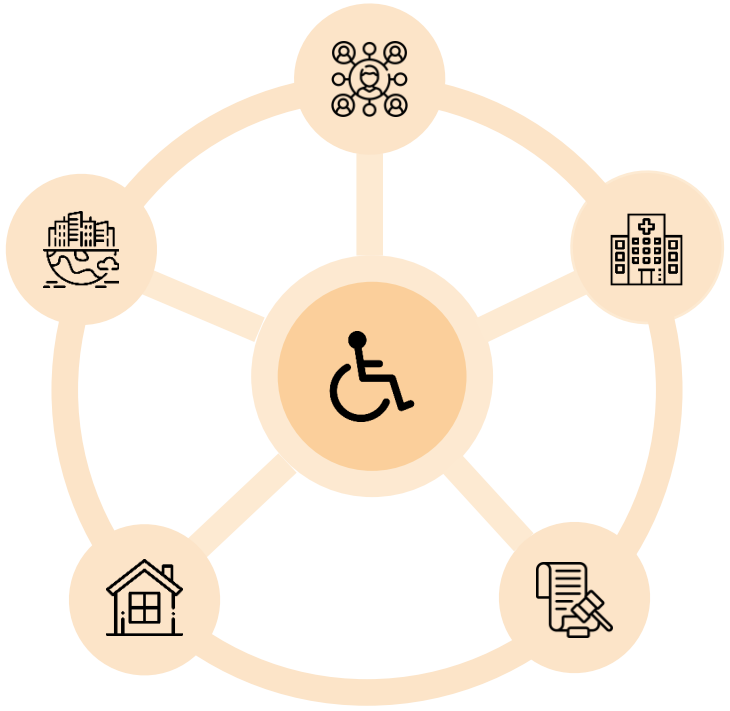
	T2 Depressive symptoms
T1 Environment Profiles (ref. Low-FE)	b (SE)
-Medium-FE	-.028(.807)
-High-FE	-.330(.856)

	T2 Depressive symptoms
T1 vs T2 SP Membership Transition Status (ref. Low →Low)	b (SE)
-Low→Moderate	-1.997(.727)**
-Low→High	-2.691(1.468)
-Moderate →Low	.373(.729)
-Moderate → Moderate	-2.273(.669)***
-Moderate →High	-3.723(.866)***
-High→Low	.383(1.475)
-High→ Moderate	-.549(.959)
-High→High	-4.362(.748)***

What do we learn from this study?

Lessons learned from

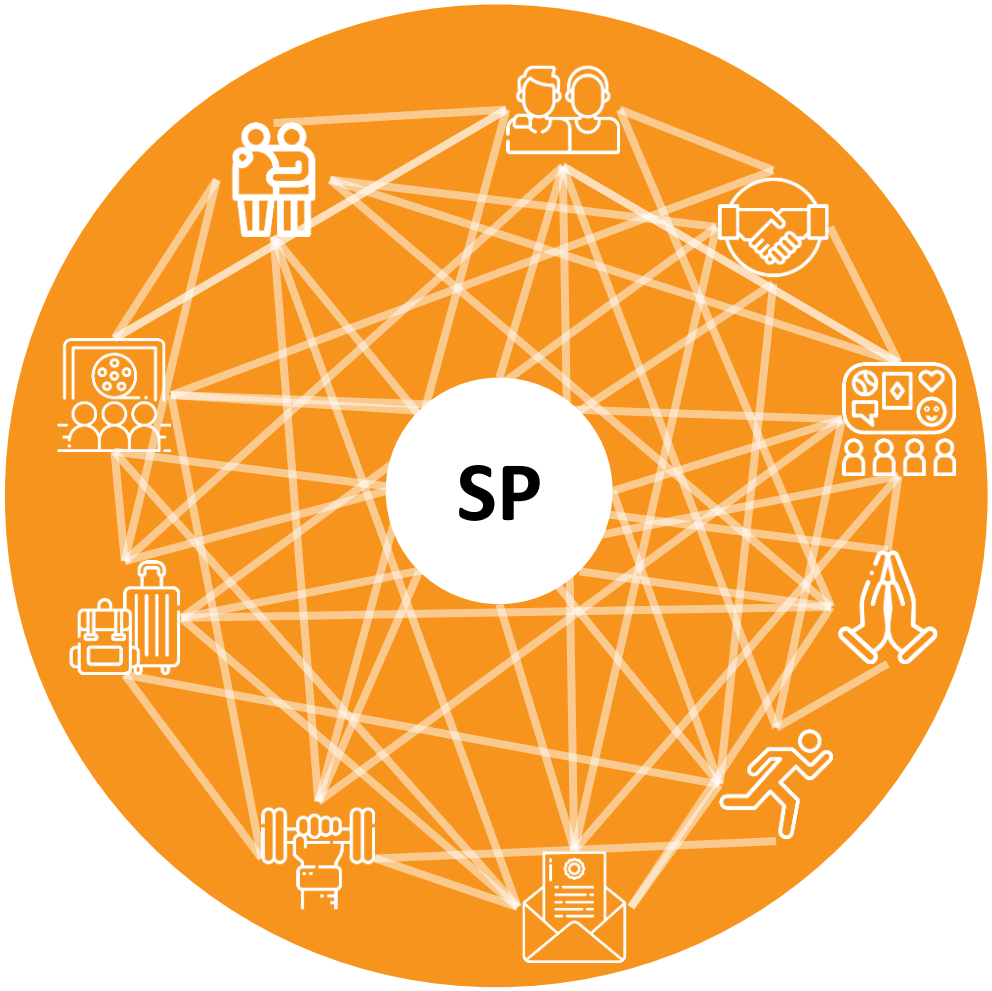
Environment profiles



- Disabled older persons consistently evaluate all aspects of their environment as high or low across the five environmental domains.
- Environment facilitators tend to be linked together.
- All surroundings in which a disabled older person embedded should be combined simultaneously to fully understand the influence of environment.

Lessons learned from SP profiles

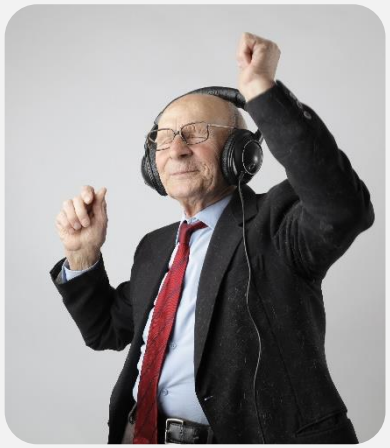
- Respondents in different classes had consistently higher or lower probabilities of engaging in all of the 10 SP-related activities.
- Disabled older persons who were active in one activity tended to be more involved in all other activities.



Lessons learned from

SP profiles (con't)

Demonstrate the heterogeneity in activity preference and lifestyle among disabled older individuals.



Being disabled does not equal to social withdrawal, a considerable portion of older persons actually are relatively robust against the constrain of disability and exhibit an active lifestyle (43% in T1 & 26% in T2).

Lessons learned from

cross-sectional relationships

High- & Moderate-FE	→	High & Moderate-SP
High- & Moderate-FE	→	↓ Depressive Symptoms
High & Moderate-SP	→	↓ Depressive Symptoms

Confirm ICF postulate:

Supportive environment + SP → Better mental health outcome

Lessons learned from longitudinal relationships

A stable tendency in SP transition: Over 50% of the sample remained in their primary status over time

A sizable proportion of the sample shifted upwards:

- "Low- to Moderate-SP" (22.9%)
- "Moderate- to High-SP" (32.6%)

A relatively small proportion of the sample converted to a deterioration in SP

- "Moderate- to Low-SP" (13.5%)
- "High- to Moderate-SP" (18.8%)

Lessons learned from longitudinal relationships (con't)

- Illustrating longitudinal connections of

High facilitative environment

↓

Remaining in more active SP classes during the T1 and T2 transition (i.e., "High to High" or "Moderate to Moderate" subgroups)

↓

Fewer depressive symptoms

Implications

- The influence of a wide variety of environment features should be considered simultaneously.
- SP-related activities should be evaluated concurrently in order to fully capture the heterogeneity in lifestyle.
- Interventions from a preventive perspective: Promote preferred meaningful SP that comprehend various life areas to optimize disabled older adults' current and future mental health.
- Programs or services should be designed to concurrently promoting environment friendliness and SP.
- Risk screen tool:

  -High Environment barriers + Low SP → Low current and future mental health

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