

CLSA Webinar

Personality Traits, Health Behaviors, and Fall Risk: Insights from the Canadian Longitudinal Study on Aging

Henrietha Adandom PhD Candidate

Supervisor: Dr. Olu Awosoga

Date: June 18, 2025



Canadian Longitudinal Study on Aging
Étude longitudinale canadienne sur le vieillissement



Overview of Presentation

- Introduction
- Background & Rationale
- Study Objectives
- Methods
- Key Findings
- Interpretation of Key Findings
- Implications for Practice and Policy
- What This Study Can and Cannot Tell Us
- Conclusion
- Q&A

Introduction

- 1 in 3 older Canadians fall each year
- \$5.6B/year healthcare cost
- Beyond injury: loss of confidence, independence
- Falls ≠ just physical



Background & Conceptual Framework

Fall Risk Is Multifactorial

- Physical, environmental, psychological, and behavioral factors contribute
- Traditional models often underrepresent psychosocial drivers
 - e.g., depression, anxiety, isolation, fear of falling, low self-efficacy
- Personality traits influence how individuals perceive, interpret, and respond to psychosocial challenges



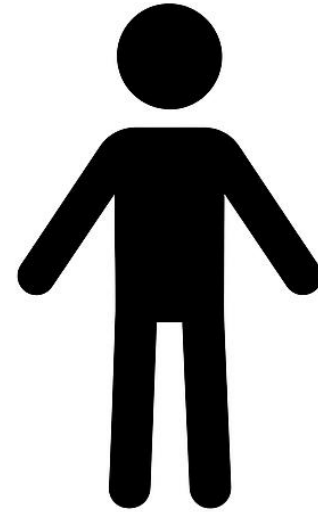


The Big Five (OCEAN):

- Openness to Experience – Imagination, creativity, open to new ideas
- Conscientiousness – Organized, self-disciplined, responsible
- Extraversion – Sociable, active, assertive
- Agreeableness – Compassionate, trusting, cooperative
- Neuroticism – Prone to worry, anxiety, emotional instability

Traits vs. Behaviors: Two Ways We Change with Age

- Trait changes: Shifts in *underlying psychological tendencies* (e.g., becoming less extraverted with age or illness).
- Behavior changes: Shifts in *observable actions* (e.g., quitting smoking, increasing physical activity)
- Both can influence fall risk—but trait changes may shape how and why behaviors change.



Traits
Stable



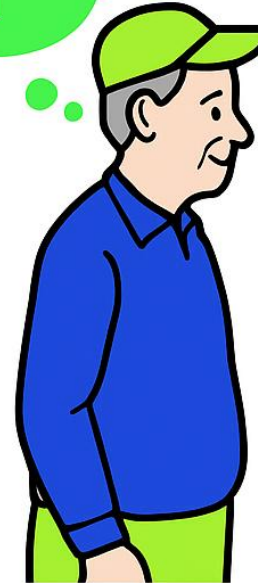
Behaviors
Changing

Health Belief Model (HBM)

- Preventive action depends on:
 - Perceived susceptibility to risk
 - Perceived severity and benefits of action
 - Self-efficacy and cues to act
- Perceptions → cues → motivation → behavior → fall risk

*Perceived
Susceptibility*

I'm steady—I
don't think I'll
fall



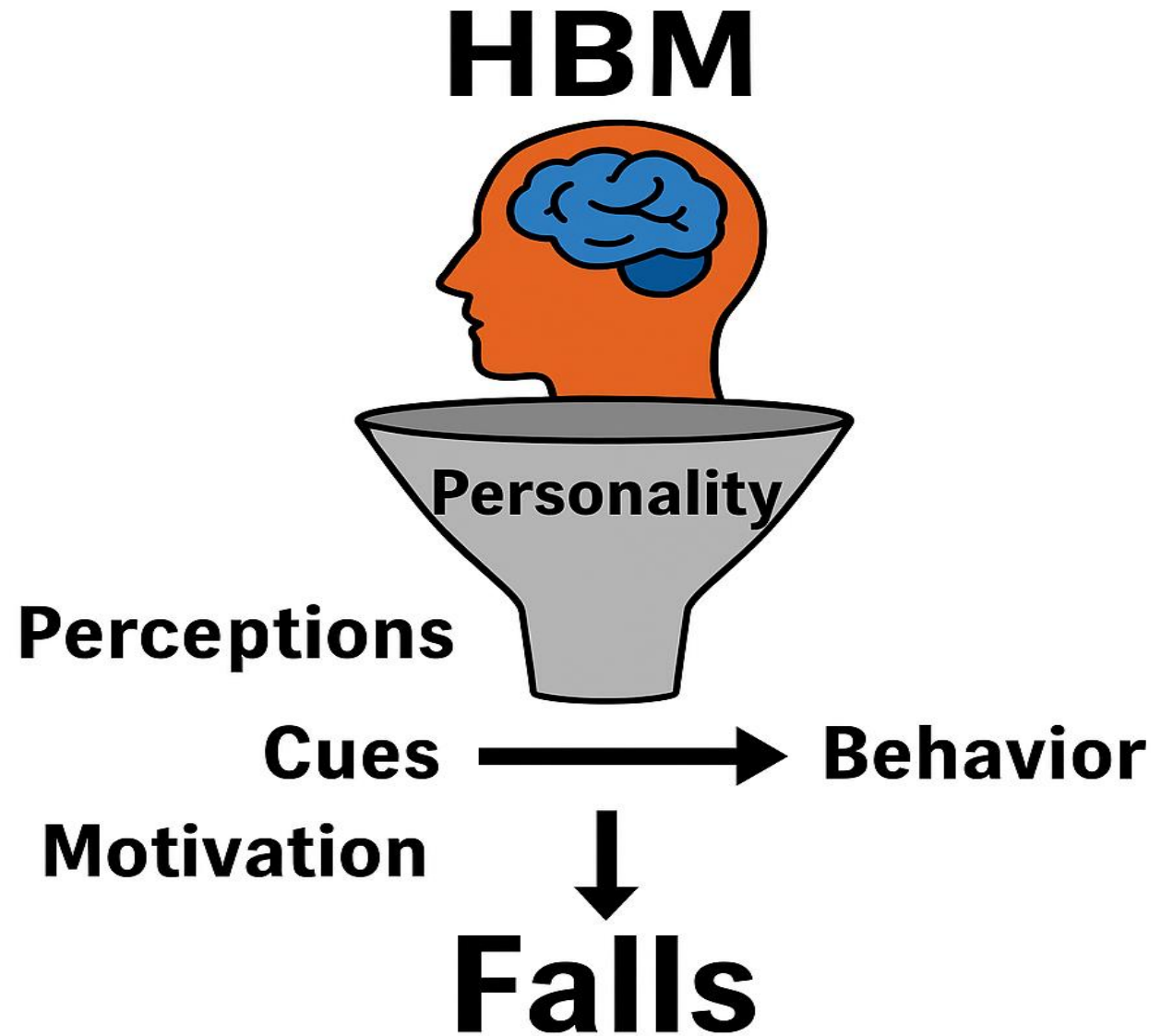
*Perceived
Severity*

Falls could
really hurt me...



Personality as a Behavioral Filter

- Traits shape how older adults interpret fall risk and respond:
 - Conscientiousness → higher vigilance, preventive behavior
 - Neuroticism → heightened fear, avoidance
 - Extraversion → higher activity, possibly higher exposure to fall risk





Study Objectives

Primary Objective

- Do personality traits and health behaviors predict falls?

Secondary Objective

- Do changes in these factors over time matter?

Why This Matters

- This study uses longitudinal data to examine how trait and behavior changes impact fall risk over time

Data Source

Inclusion and Exclusion Flowchart

Comprehensive cohort: 30097

Individuals with data across three time points: 25376
Excluded: 4721

Individuals with data approximately three-year interval: 13928
Excluded: 11448

Individuals 65 years and above: 5270
Excluded: 8656

Key Measures

Outcome: Falls in past 12 months

Predictors: Personality (Ten Item Personality Inventory – TIPI),
Physical activity (Physical Activity Scale for the Elderly – PASE),
alcohol/smoking)

Covariates: Age, sex, marital status, education, residence, cultural
identity, presence of chronic condition, depression, and cognition
(Stroop/MAT/CRT)

Analytical Approach

- Descriptive statistics to characterize the sample (baseline and follow-up)
- Bivariate logistic regression to examine unadjusted associations with falls
- Multivariate logistic regression adjusting for key covariates:
 - Age, sex, marital status, education, depressive symptoms, cognition, chronic conditions
- Personality and health behavior change scores (Baseline – Follow-up) included as predictors
 - Personality measurement stopped at FUP1
- Significance threshold set at $p < 0.05$

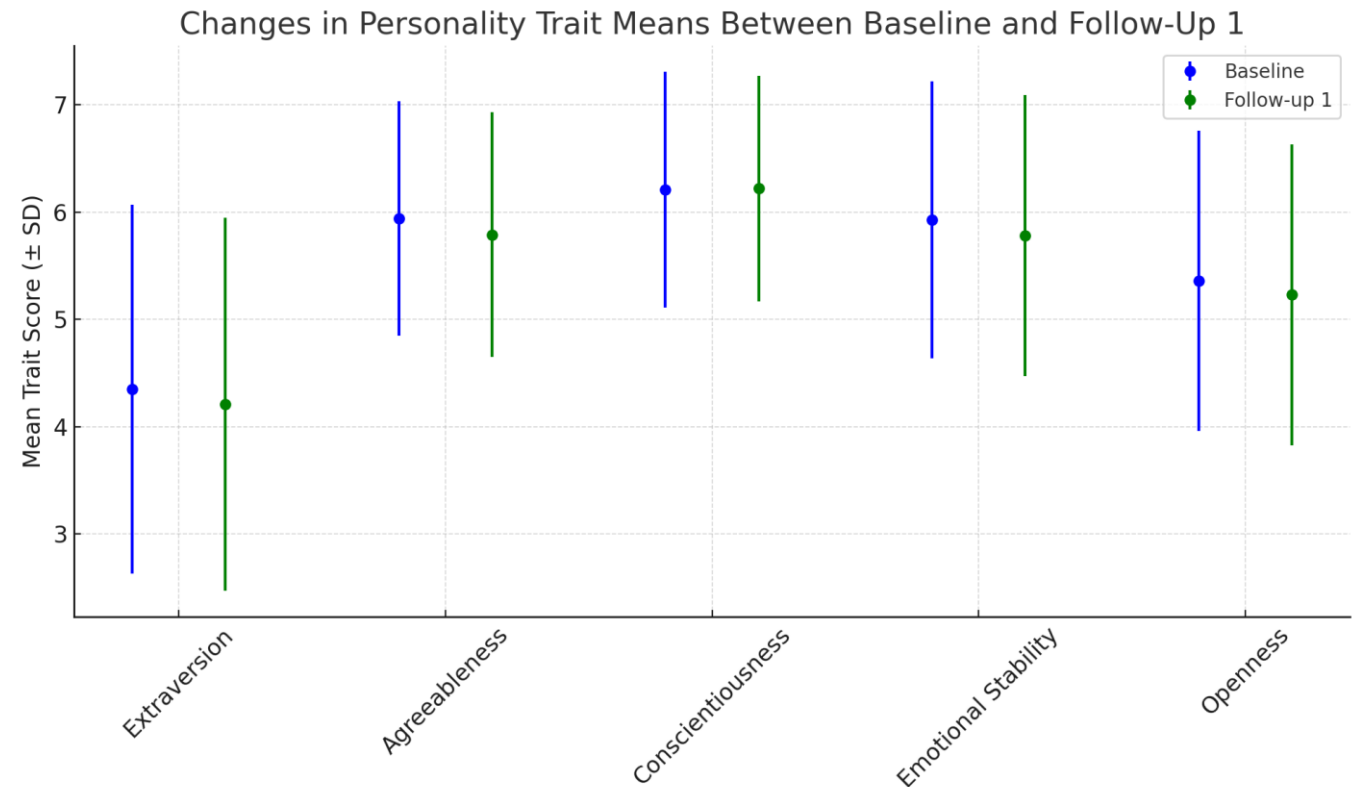
Sample Characteristics

- Total sample, n = 5270
 - Mean age: 72 years
 - 51.1% female
 - 96.7% White,
 - 81.5% post-secondary education
 - Fallers increased from 5.1% to 8.7%





VARIABLE	PERCENTAGE (%)		X ²	P-VALUE
	Baseline	Follow up2		
Marital status			37.413	<0.001*
Do not have a partner	1900 (36.1)	2205 (41.9)		
Have partner	3369 (63.9)	3061(58.1)		
Residence			22.904	<0.001*
Rural	414 (7.9)	290 (5.5)		
Urban	4856 (92.1)	4960 (94.5)		
Smoking history			19.612	<0.001*
Never smoked	2678 (50.8)	2507 (48.7)		
Former smoker (quit)	2356 (44.7)	2478 (48.1)		
Current smoker	235 (4.5)	165 (3.2)		
Alcohol consumption			61.664	<0.001*
Non drinkers	624 (12.2)	910 (17.3)		
Occasional drinkers	618 (12.0)	683 (13.0)		
Regular drinkers	3892 (75.8)	3668 (69.7)		
Chronic Conditions			318.501	<0.001*
No	364 (6.9)	18 (0.7)		
Yes	4886 (93.1)	5132 (99.3)		
Fall status			54.932	<0.001*
No	5002 (94.9)	4808 (91.3)		
Yes	268 (5.1)	461 (8.7)		

Trait Variability Across Timepoints

- Conscientiousness and agreeableness remained consistently high, reflecting a generally responsible and cooperative sample.
- Extraversion, emotional stability, and openness declined modestly over time, potentially signaling:
 - Reduced energy or social withdrawal (extraversion)
 - Increased stress sensitivity (emotional stability)
 - Less engagement with novelty (openness)
- Standard deviations highlight meaningful individual differences, especially in extraversion and openness.









Baseline – Bivariate Associations with Fall Risk

-  **Baseline Trends**
 -  All personality traits → ↑ Fall Risk
 -  Current/former smoker &  occasional drinker → ↓ Fall Risk

Variable	Odds Ratio	95% CI (Lower–Upper)	p-value
Smoking History			
Never smoked	1.192	1.112 – 1.277	<0.001*
Current smoker	0.651	0.542 – 0.784	<0.001*
Former smoker (quit)	0.899	0.839 – 0.964	0.003*
Alcohol Consumption			
Non-drinkers	0.935	0.847 – 1.032	0.181
Occasional drinkers	0.747	0.666 – 0.838	<0.001*
Regular drinkers	1.215	1.121 – 1.317	<0.001*
Physical Activity (unit ↑)	1.001	0.999 – 1.002	0.359
Personality Traits			
Extraversion (↑)	1.133	1.110 – 1.157	<0.001*
Agreeableness (↑)	1.116	1.079 – 1.154	<0.001*
Conscientiousness (↑)	1.071	1.035 – 1.107	<0.001*
Emotional Stability (↑)	1.061	1.032 – 1.091	<0.001*
Openness (↑)	1.173	1.143 – 1.204	<0.001*

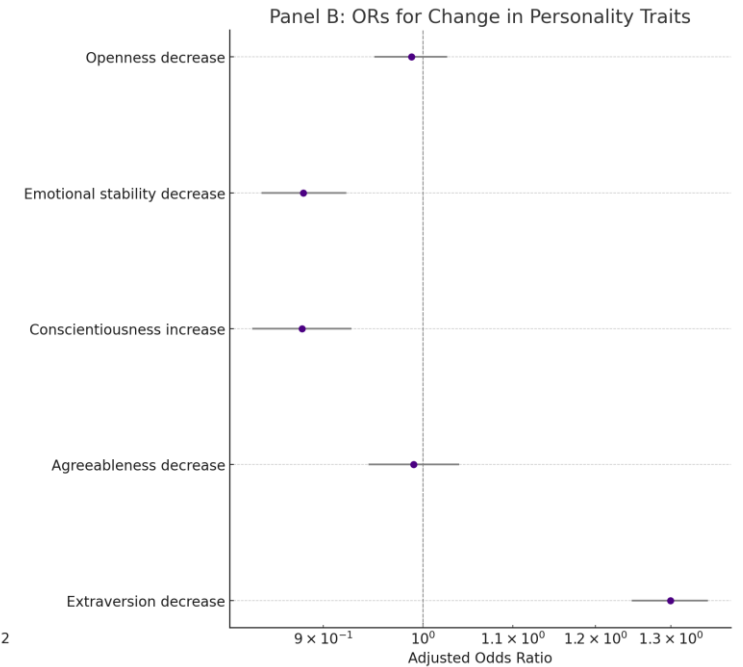
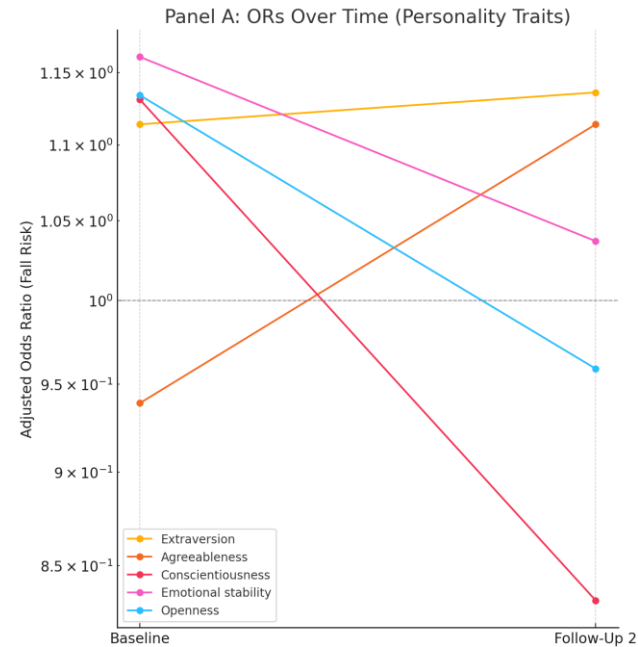
Follow-Up 2 – Bivariate Associations with Fall Risk

-  **Follow-Up Trends**
 -  Agreeableness, Conscientiousness, Emotional Stability → ↓ Fall Risk
 -  Extraversion, Openness → ↑ Fall Risk
-  **Behavioral Patterns**
 -  Non-smoker, regular drinker, active → ↓ Fall Risk
 -  Former smoker, non-drinker → ↑ Fall Risk

Variable	Odds Ratio	95% CI (Lower–Upper)	p-value
Smoking History			
Never smoked	0.753	0.718 – 0.789	<0.001*
Current smoker	0.392	0.325 – 0.473	<0.001*
Former smoker (quit)	1.448	1.381 – 1.517	<0.001*
Alcohol Consumption			
Non-drinkers	1.322	1.251 – 1.397	<0.001*
Occasional drinkers	1.025	0.959 – 1.094	0.468
Regular drinkers	0.795	0.758 – 0.834	<0.001*
Physical Activity (unit ↑)	0.996	0.995 – 0.997	<0.001*
Personality Traits			
Extraversion (↑)	1.113	1.098 – 1.129	<0.001*
Agreeableness (↑)	0.915	0.897 – 0.934	<0.001*
Conscientiousness (↑)	0.906	0.887 – 0.926	<0.001*
Emotional Stability (↑)	0.920	0.905 – 0.935	<0.001*
Openness (↑)	1.120	1.101 – 1.140	<0.001*

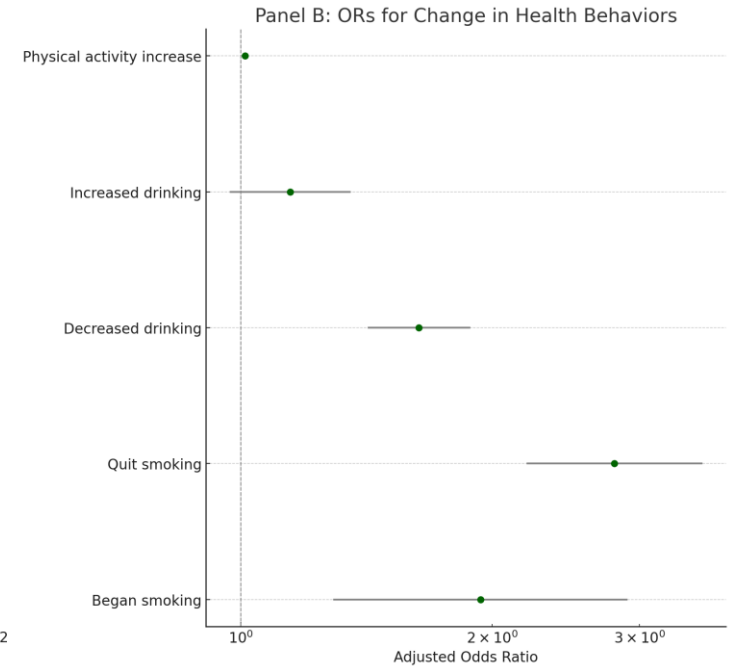
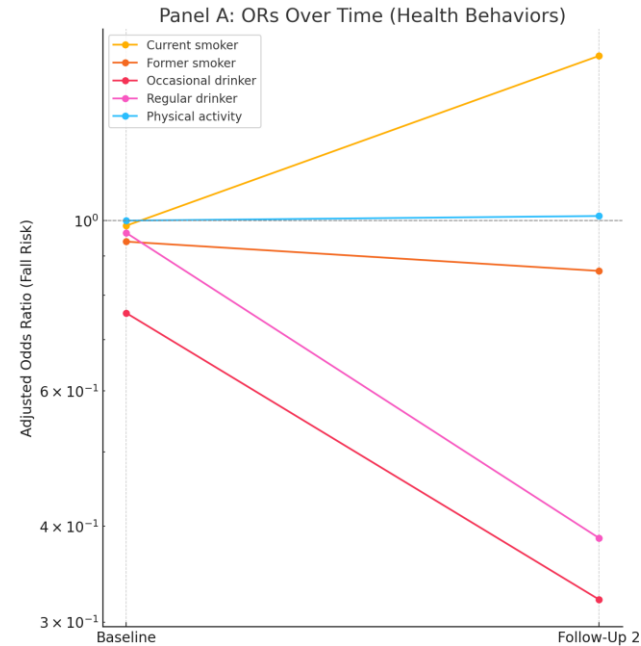
Multivariate findings- Personality

- Panel A shows how the impact of selected traits on fall risk evolved between baseline and follow-up.
- Panel B highlights how actual *changes* in these characteristics influenced fall risk over time.
- Distinct colors are used in Panel A to improve clarity of trends across predictors.



Multivariate findings- Behaviors

- Panel A shows how the impact of selected traits on fall risk evolved between baseline and follow-up.
- Panel B highlights how actual *changes* in these characteristics influenced fall risk over time.
- Distinct colors are used in Panel A to improve clarity of trends across predictors.



Trait–Behavior Contributions to Fall Risk

Personality Adjustment → Health Behavior Effects

Current Smoking: From ↓ risk → ↑ risk

↔

Quit Smoking: From ↓ risk → ↑↑ risk

↔

Physical Activity: From ↓ risk → ↑ risk

↔

Regular Drinking: Protective → Stronger Protective

↔

Decreased Drinking: From NS → ↑ risk

Health Behavior Adjustment → Personality Effects

Agreeableness: From ↓ risk → ↑ risk

Emotional Stability: From ↓ risk → Not significant

Conscientiousness: Still protective, slightly weakened

Openness: Protective, modest but stable

Extraversion: Risk-enhancing, consistent across models

Interpretation of Key Findings

- **'Healthy' behavior changes** (e.g., quitting alcohol/smoking) may reflect underlying **health deterioration** or a response to emerging illness—not just proactive choices.
- **Changes in personality traits**, such as declining extraversion, may signal **psychological vulnerability** or **withdrawal** due to frailty or fear.
- These findings highlight the need to **integrate behavioral and psychological dimensions** when assessing fall risk, especially given the variability in personality traits across individuals.



Implications for Practice and Policy

Key Implication

Personality-informed screening

Timing interventions with behavior change

Personalized public health messaging

Target high-risk transitions

What This Could Look Like

Add trait-based questions into fall risk assessments

Monitor older adults during life changes (e.g., quitting smoking)

Tailor fall prevention campaigns by personality style (e.g., calm vs. action-oriented tone)

Focus resources during known shifts (e.g., hospital discharge, widowhood)

What This Study Can and Cannot Tell Us

What the Study Can Tell Us

Links between personality/behavior and fall risk

Impact of changes in traits and behaviors over time

Generalizable insights relevant to healthy, community-dwelling older Canadians, particularly those who are white, educated, and female

Relevance of integrating personality into fall risk screening

What the Study Cannot Tell Us

Causality –due to observational design

Whether changes were voluntary or reactive to health conditions

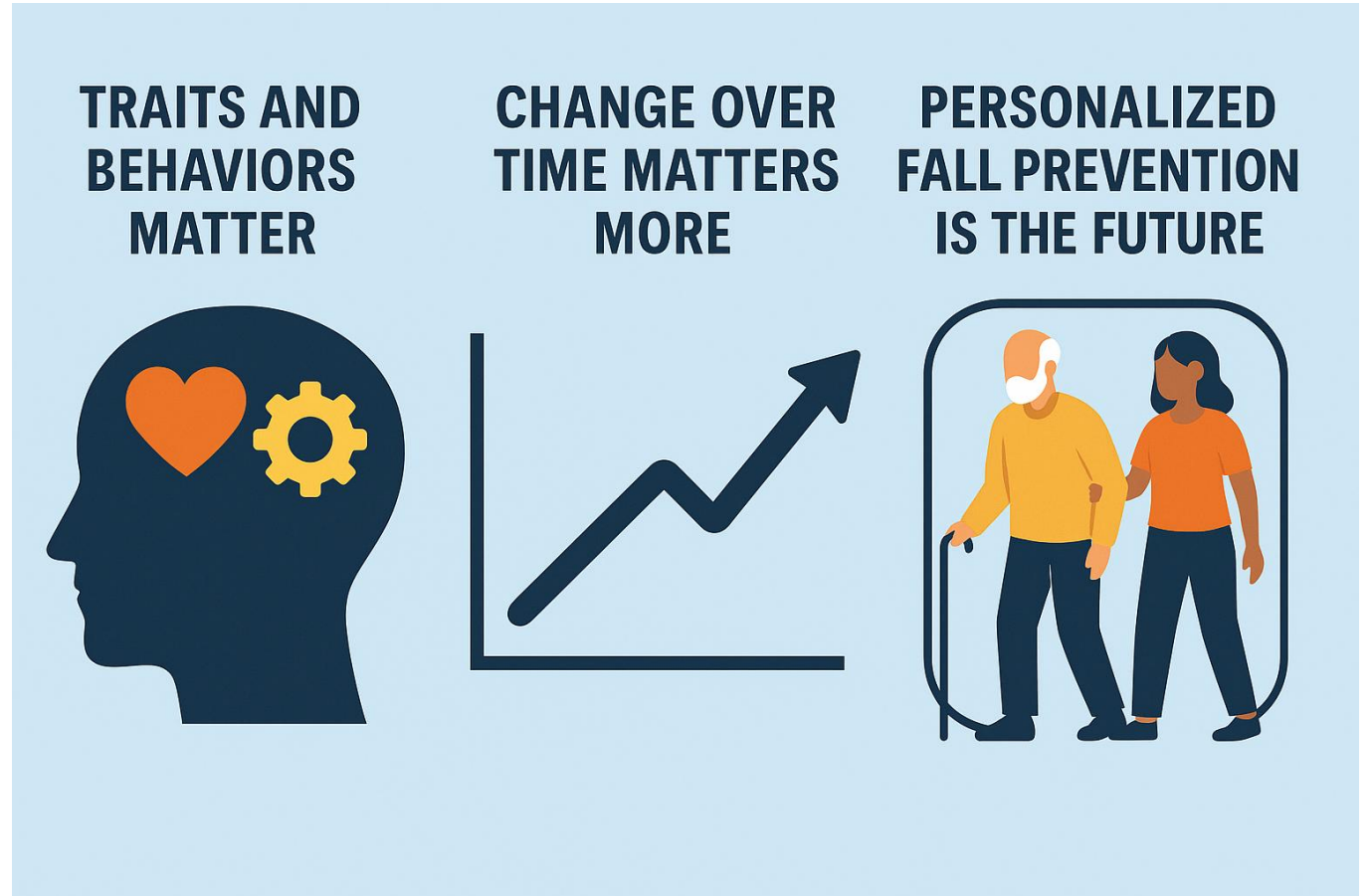
It may not generalize to diverse, underserved, institutionalized, non-Canadian, or clinical older adult populations.

Mechanisms driving observed relationships (e.g., why reduced drinking increases fall risk) remains unclear

We could not differentiate between single and recurrent falls, limiting insight into fall severity or chronicity.

Conclusion

- Traits and behaviors matter
 - → Fall risk is shaped not just by physical factors, but by who we are and how we act.
- Change over time matters more
 - → It's not just what traits or behaviors someone has, but how they shift over time that elevates or reduces risk.
- Personalized fall prevention is the future
 - → Screening and interventions must be dynamic and individualized, attuned to life transitions and psychological shifts.



Acknowledgements

- CLSA
- Co-authors and supervisors
 - Dr Adesola Odole
 - Dr. Lisa Cook
 - Dr. Shan Gongbing
 - Dr. Olu Awosoga
 - Chiedozie Alumona, PhD Candidate
 - Israel Adandom, PhD Candidate

> [J Appl Gerontol](#). 2025 Mar 24:7334648251328427. doi: 10.1177/07334648251328427.
Online ahead of print.

Personality Traits and Health Behaviors as Predictors of Fall Among Community-Dwelling Older Adults: Findings From the Canadian Longitudinal Study on Aging

Henrietha C Adandom¹, Chiedozie J Alumona¹, Israel I Adandom², Adesola C Odole³,
Lisa L Cook⁴, Gongbing Shan⁵, Oluwagbohunmi A Awosoga¹

Affiliations + expand

PMID: 40127406 DOI: [10.1177/07334648251328427](#)

[Free article](#)

Abstract

Objectives: To examine whether personality traits and health behaviors predict falls in community-dwelling older adults. **Methods:** Longitudinal data from the Canadian Longitudinal Study on Aging (CLSA) at baseline (2011-2015) and follow-up two (2018-2021) were analyzed using logistic regression for 5270 adults aged 65 and older, with an alpha level of 0.05. **Results:** At baseline, participants' mean age was 72 years, with 51.1% female. Most identified as White (96.7%) and had education beyond secondary (81.5%). Increased physical activity (OR: 1.012, 95% CI: 1.01-1.014), decreased alcohol consumption (OR: 1.634, 95% CI: 1.419-1.883), and smoking cessation (OR: 2.8, 95% CI: 2.198-3.568) increased fall risk, while conscientiousness (OR: 0.832, 95% CI: 0.792-0.874) and openness (OR: 0.959, 95% CI: 0.922-0.998) were protective at follow-up two. Personality changes significantly influence falls. **Discussion:** Findings highlight the complex interplay between personality traits, health behaviors, and falls, suggesting a one-size-fits-all approach to fall prevention may be insufficient.

Keywords: CLSA; falls; health behaviors; older adults; personality.

FULL TEXT LINKS

Sage Journals
Open access full text

ACTIONS

“ Cite

🔖 Collections

SHARE



PAGE NAVIGATION

< Title & authors

Abstract

Similar articles

Related information

LinkOut - more
resources

Thank you for listening!



Any Questions?