

## **Supplementary Material**

1. WHISH trial description and details
2. MET-hours of walking variable calculation details
3. Comparison of Those Who Returned Postcards and Those Who Did Not Return Postcards
4. Strategy Coding Procedure Details
5. Interrater reliability for subcategory coding of sample subset
6. Detailed Description of Strategy Codes and Categories

## 1. WHISH Trial Description

The Women’s Health Initiative (WHI) Strong and Healthy (*WHISH*) trial is a pragmatic, randomized controlled trial embedded within the WHI-Extension Study (WHI-ES). *WHISH* used a randomized consent design to assign 49,333 WHI-ES participants for whom cardiovascular events, the primary outcome of the trial, are available to the *WHISH* physical activity intervention or “usual activity” comparison for up to 8 years. (Stefanick, 2021). The *WHISH* intervention is based on the 2008 Physical Activity Guidelines for older Americans (USDHHS, 2008) as presented in the National Institute on Aging (NIA) *Go4Life*® health education campaign (32) NIA. Go4Life ® from the National Institute on Aging at NIH. (<http://go4life.nia.nih.gov/>), and the updated 2018 Physical Activity Guidelines for older Americans (USDHHS, 2018). The centrally delivered (from Stanford University) *WHISH* intervention applies state-of-the-science behavioral theories, including social cognitive theory (Bandura, 2001), ~~the transtheoretical model of behavior change (Marshall & Biddle, 2001; Prochaska & Velicer, 2016)~~ the transtheoretical model of behavior change (Marshall & Biddle, 2001; Prochaska & Velicer, 2016) to all written materials provided to participants.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1), 1–26.

Marshall, S. J., & Biddle, S. J. (2001). The transtheoretical model of behavior change: A meta-analysis of applications to physical activity and exercise. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, 23(4), 229–246.

[https://doi.org/10.1207/S15324796ABM2304\\_2](https://doi.org/10.1207/S15324796ABM2304_2)

Prochaska, J. O., & Velicer, W. F. (2016). The Transtheoretical Model of Health Behavior

Change: *American Journal of Health Promotion*. <https://doi.org/10.4278/0890-1171->

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## 2. MET-hours of walking per week coding

Question					
Think about the walking you do outside the home. How often do you walk outside the home for more than 10 minutes without stopping?		When you walk outside the home for more than 10 minutes without stopping, for how many minutes do you usually walk?		What is your usual speed? (casual strolling or walking, average or normal, fairly fast, very fast, or don't know)	
Walks per week		Minutes Walking		MET*	
Response option	Code	Response option	Code	Response option	Code
Rarely or never	0	Less than 20 mins	15	Casual Strolling or walking	2
1 to 3 times each month	0	20 to 39 mins	30	Average or normal	3.0
1 time each week	1.0	40 to 59 mins	50	Fairly Fast	4.0
2 to 3 times each week	2.5	1 hour or more	70	Very Fast	5.0
4 to 6 times each week	5.0	Blank	30	Don't know	3.0
7 or more times each week	7.0	-	-	-	-

*Note:* \* taken from Ainsworth, 1993

MET-hours of walking per week = Walks per week x minutes walking / 60 x MET

### 3. Comparison of Those Who Returned Postcards and Those Who Did Not Return Postcards

For this study, all 19,598 women who were assigned to the WHISH intervention arm who were still alive and active were sent postcards with the prompt on one side and a request box for a free pedometer belt to accompany the study-provided pedometer on the other. Of these, 4646 women returned the postcards requesting a pedometer belt; 4108 of these also included a response to the prompt. The differences between these three groups are described below in the tables.

**SM Table 3**

*Demographic and Characteristic Comparisons: Continuous Measures*

		Postcard Return Grouping		
		Returned with Prompt Response	Returned, No Prompt Response, Belt Request Only	Didn't Return
Age	n	4092	538	14573
	M (SE)	81.2 (.09)	82.1 (.24)	82.4 (.06)
	Range	70-99	70-99	69-102
Physical activity hours / week*	n	3827	505	12301
	M (SE)	7.9(.10)	6.2(.30)	5.7(.05)
MET-hours walking / week*	n	3862	505	12275
	M (SE)	5.1(.10)	4.2(.25)	3.7(.05)

\* includes most recent value over five years

**SM Table 4**

*Demographic and Characteristic Comparisons: Categorical Measures*

		Postcard Return Grouping					
		Returned with Prompt Response		Returned, No Prompt Response, Belt Request Only		Didn't Return	
		n	%	n	%	n	%
Education		4108		586		14478	
	High school or less		13.1		17.9		17.3
	School after high school		34.3		31.4		35.3
	College or more		51.7		42.3		46.8

No response	0.9	8.4		0.7
Race/Ethnicity			14573	
White	81.8	76.5		82.8
African American	10.4	7.5		10.4
Hispanic	3.5	3.4		3.6
Asian/Pacific	2.4	3.1		1.9
Islander				
Native	0.5	0.3		0.3
American/Native				
Alaskan				
Other/Unknown	1.1	1.0		1.1
No Response	0.4	8.2		0
Region			14573	
Northeast	28.4	24.4		30.1
Southeast	21.0	19.3		23.1
Midwest	25.2	27.0		23.7
West	25.1	21.2		23.0
No response	0.4	8.2		0

### **Statistical Analyses**

We statistically compared the groups using ANOVAs with planned contrasts and Chi Squares. Postcard return group was the independent factor for all tests, with three groups: Returned with Prompt Response, or those who returned the postcard with a response to the prompt; Returned with No Response, or those who returned the postcard with no response; Didn't Return, or those who did not return the postcards. We compared on age, physical activity hours per week, MET-hours of walking per week, education, race, and region.

#### ***Age***

An ANOVA showed a significant difference of age by postcard group,  $F(2,1920)=64.5$ ,  $p<.001$ ; those who returned the postcard were significantly younger than those who returned it without a response,  $p=.001$ , and those who did not return the postcard,  $p<.001$ .

#### ***Physical Activity Hours per Week***

An ANOVA showed a significant difference physical activity hours / week by postcard group,  $F(1,16631)=182.07$ , with those returning the postcard with a response being significantly more active than those who returned it without a response,  $p<.001$ , and those who did not return the postcard,  $p<.001$ .

#### ***MET-Hours of Walking per Week***

An ANOVA showed a significant difference MET-hours walking / week by postcard group,  $F(1,16638)=88.58$ , with those returning the postcard with a response being significantly more active than those who returned it without a response ( $p=.001$ ), and significantly more active than those who did not return the postcard.

**Education**

Significant difference by postcard group, Chi Square,  $\chi^2(4, n=19084) = 54.89, p<.001$ .

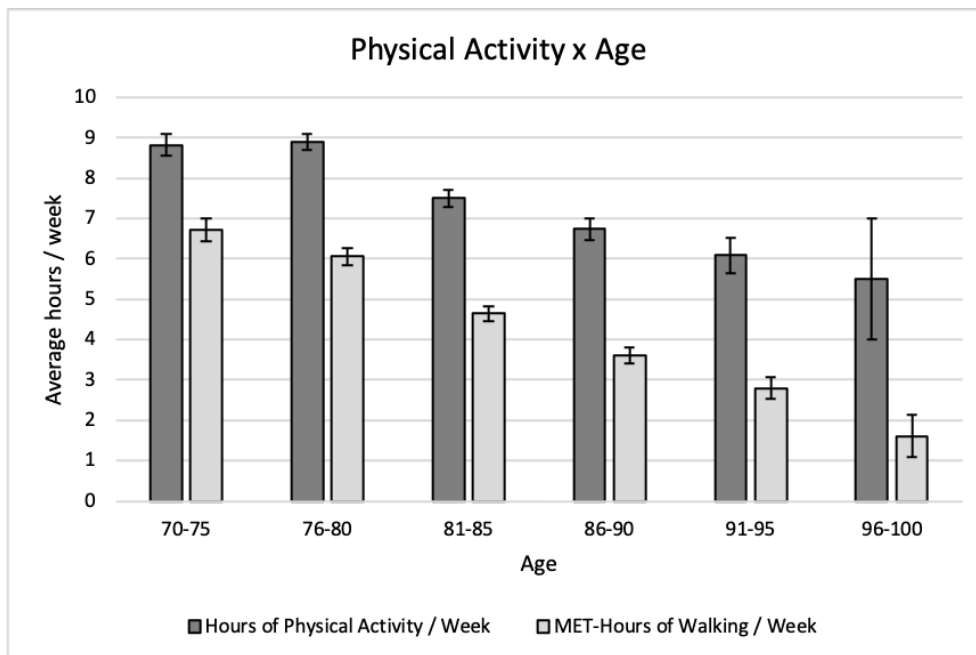
**Race**

No significant difference by postcard group, Chi Square,  $\chi^2(10, n=19203) = 16.45, p=.087$ .

**Region**

Significant difference by postcard group, Chi Square,  $\chi^2(6, n=19203) = 27.10, p<.001$ .

**SM Figure 1:** Average Physical Activity Hours / Week x Age



*Note: Error bars represent standard errors of the mean.*

#### **4. Strategy Coding Procedure Details**

The development of the coding scheme and resulting coding process was iterative between the first coder (second author) and second coder (first author). In line with Oppizzo & Schwartz (2013) and Duckworth et al. (2016), the two deductive, broad categories were: Internal or External. From a random selection of 200 responses, both coders established the coding scheme for Internal and External categories. New, mutually exclusive subcategories emerged that provided more refined distinctions within the Internal and External broader categories, as well as other subcategories that were nonactionable strategies (i.e. could not be replicated, like the doorbell ringing). The first coder coded the entire corpus, discussing ~150 boundary examples with the second coder to further refine the categories and coding rules. The coders then trained on a random set of 200 responses using the codebook, discussing interrater discrepancies in coding decisions. Final inter-rater reliability (Kappa coefficient) was determined on 400 random responses (~10% of the dataset). All Kappas on initial ratings were above .8 except for three subcategories of responses: “Unclear,” “Nothing Worked,” and “Passive,” (details in supplementary materials). Given low base rates of Unclear, Nothing Worked, and Passive, both coders jointly discussed and adjudicated codes for these responses from the corpus. All other disagreements about category placement or number of strategies listed were resolved through discussion, and the second author refined codes from the entire corpus if modification was needed.



### 5. Interrater reliability for subcategory coding of sample subset

Subcategory	Kappa (number of strategies)	Kappa (binary categorization)
Intrapsychic	0.82	0.84
Avoid bad	0.93	0.94
Approach good	0.86	0.85
Manipulate	0.85	0.91
Capitalize	0.85	0.85
Social	0.91	0.91
Just do it	0.83	
Passive	0.66	
Nothing worked	0.46	
Motivation not an issue	0.87	
Unclear	0.71	

## 6. Detailed Description of Strategy Codes and Categories

Categories	Description
Internal	
Intrapsychic	General Internal strategies that include: cognitive reframing or modification of mindset; general redirection of one's attention toward responsibilities or personal commitment to exercise; motivational statements or self-talk; general goals that don't reference any specifics; thinking generally about the importance of physical activity or health; prayer or spiritual engagement; meditation
Avoid bad	Internal strategies that involve thinking about anything negative/bad that could happen as a result of not getting up and moving. Strategies that include: thinking about or reminding oneself of what could happen if one does not get up and move; moving to avoid a specific bad outcome; thinking about a time of bad health that one wants to avoid; thinking about someone else who has suffered due to a lack of physical activity; moving to avoid guilt or letting oneself/others down
Approach good	Internal strategies that involve thinking about anything positive/good that could happen as a result of getting up and moving. Strategies that include: reminding oneself of what could happen if one does get up and move; moving to be healthy or to feel better afterwards; seeing someone else do something good (like walking fast or completing an exercise) and being encouraged that one can also do it; thinking about someone else who has lived a long, healthy life and was also physically active; thinking about anything positive that can result from being able to remain mobile and independent (being able to live alone, travel, play with grandkids, etc.)
External	
Manipulate	External strategies that involve situation selection or active, visible situation modification. These strategies require active manipulation of the body/surroundings or the use of already in place arrangements (i.e. using a gym membership one already has). Strategies that include: active, triggered goals; creating reminders to build physical activity into the day; using a tracking mechanism to monitor activity; modifying one's situation/location; receiving reinforcement from others; somatic changes that make being physically active easier; creating and maintaining a habit or routine.
Capitalize	External strategies that involve making use of something from one's surroundings for motivation that was not necessarily put in place with the intention of motivating physical activity. Strategies that include: being motivated to get up and move because of daily tasks such as chores or errands; moving because it is a part of one's role (caretaker, pet owner, etc.)

## Other

Just Do It	Response was either willpower, just doing it with no strategy or explanations, or implied force (“I forced myself”).
Passive	Response indicates it was by chance and not on their own accord that they got up to move, therefore no intentional strategy was deployed.
Nothing worked	Responses that indicate that nothing worked to get the participant to move despite attempting something; the attempt did not have to get detailed, the idea that “nothing worked” implied something was tried.

## Non strategy codes

Motivation not an issue	Responses that indicate that there is no strategy being used because there is no problem getting up and being active. If a participant notes that they are always active without issue but provides an actionable strategy, this actionable strategy overrides the comment that motivation is not an issue.
Description of condition	A description of one's situation or one's health conditions.

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## Social

This qualifier code can be added on top of any Internal or External strategy. Social strategies are those that involve the participants utilizing others as a primary aspect of the motivational strategy. Strategies that include: direct involvement with another person/people, including taking care of another person; taking care of/doing something with a pet.

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