

From: SHIELD Researchers
To: Readers of the 24 month Shield effects paper
Re: 24 month paper scale and physiological index information
Date: 2/19/16

Summary

This report gives specific information on how scales and indices were constructed for the 24-month Shield project. Table 1 contains the scale/index and the items used to make the scale/index. The scale or index is written in bold. After each scale or index name, the items that were used to make the scale are listed. Table 2 lists the specific questions and response options for each scale/index. Table 3 lists the coefficient alpha for each scale. The coefficient alpha reliability measure is not appropriate for indices. The fruits and vegetables measures are treated as an index rather than a scale because individual items are added to measure amount of fruits and vegetables consumed rather than a scale where each item is treated as a measure of a latent variable. Table 4 lists the test-retest correlations for each scale and physiological measure. Table 5 contains the matrix of evolving and refined themes and representative quotes from the participants in the group interviews. Figure 1 contains a plot of the average sleep quality for the intervention and control group at each wave.

Fruit and Vegetable Intake. The NCI Fruit and Vegetable Screener (Thompson et al., 2002) was used to measure daily nutrition behaviors in the form of fruit and vegetable consumption (available at <http://appliedresearch.cancer.gov/diet/screeners/fruitveg/bymeal.pdf>). The screener measures the frequency with which respondents ate 10 food items, along with the portion size of these items, over the past month. Total fruit and vegetable intake was used for this study, which represents a daily combined average of fruit and vegetable servings.

Sleep Quality. Sleep quality was assessed using four self-reported measures with items from the Pittsburgh Sleep Quality Index (available at

<http://www.sleep.pitt.edu/includes/showFile.asp?fltype=doc&flID=2532>) and the National Institutes of Health Patient-Reported Outcomes Information System (PROMIS) sleep disturbance (information available at <http://www.nihpromis.org/Measures/domainframework1>). Participants were asked about quality of sleep and satisfaction with sleep as well as trouble sleeping. Cronbach's alphas ranged from .886 to .914 across the four waves.

Sleep Quantity. Sleep quantity was assessed using three self-reported measures with items from the Pittsburgh Sleep Quality Index and the National Institutes of Health Patient-Reported Outcomes Information System (PROMIS) sleep disturbance. Participants were asked to provide the amount of hours slept on average in the past month as well as how often they felt they had gotten enough sleep in the past week. Cronbach's alphas ranged from .796 to .820 across the four waves.

General Health. Participants' self-reported general health was measured with the 'General Health' subscale of the SF-36 (Ware, Snow, Kosinski, & Gandek, 1993). This widely used subscale measures respondents' perceptions of their own general health in relation to others. Cronbach's alphas ranged from .742 to .770 across the four waves.

Stress Self. Participant stress was assessed with a scale of four items, in which respondents answered questions about the extent to which stress affected them at work and home, and healthy management of stress. Cronbach's alphas ranged from .777 to .792 across the four waves.

Healthy Eating Self. Participant healthy eating habits were assessed with a scale of five items, in which respondents answered questions about making healthy food choices at home and in restaurants. Cronbach's alphas ranged from .783 to .823 across the four waves.

Physical Activity Habits. Physical activity habits were assessed with an index of four items of the number of days in which respondents performed moderate or heavy exercise for at least 30 minutes, along with a single item assessing the extent to which respondents performed daily exercise for 30 minutes. Cronbach's alphas ranged from .879 to .911 across the four waves.

Alcohol Consumption. Alcohol was assessed using seven items from the Health Maintenance Consortium (available at <http://hmcrc.srph.tamhsc.edu/Measures/MeasuresMain.html>). Cronbach's alphas ranged from .786 to .810 across the four waves.

Tobacco Use. Tobacco use was measured by one item, in which respondents answered whether they were ever tobacco users and if so, how frequently and how recently they used tobacco.

Depression. Depression was assessed using five items from the Health Maintenance Consortium (available at <http://hmcrc.srph.tamhsc.edu/Measures/MeasuresMain.html>). Cronbach's alphas ranged from .826 to .839 across the four waves.

Table 1 List of Items for each Scales and Index

Fruits: single variable, c_frsrv, is the sum of the 2 calculated fruit daily serving scores.

Vegetables: single variable, c_vgsrv, is the sum of the 8 calculated vegetable daily serving scores.

Fruits/Vegetables: single variable, c_fvsrv, is the sum of the 10 calculated fruit and vegetable daily serving scores.

Sleep Quality: z scores computed for all 4 items, 2 items reverse coded to reflect higher score = better sleep quality (2 items not reverse coded are slpsat and slp7qly), then 4 items averaged to compute scale.

Sleep Quantity: z scores computed for all 3 items, items reflect higher score = more sleep, then 3 items averaged to compute scale.

Sf-36: General Health: all 5 items retain their raw format as all items are in the same metric, 2 items reverse coded to reflect higher score = better general health (3 items not reverse coded are d_sick, d_hlth, and d_worse), then 5 items averaged to compute scale.

Stress Self: all 4 items retain their raw format as all items are in the same metric, 3 items reverse coded to reflect higher score = less stress (item not reverse is imngstr), then 4 items averaged to compute scale.

Healthy Eating Self: z scores computed for all 5 items, 1 item reverse coded to reflect higher score = healthier eating (4 items not reverse coded are hlthffd, hlthres, me5fv, and melowft), then 5 items averaged to compute scale.

Physical Activity Self: z scores computed for all 5 items, all items reflect higher score = more physical activity, then 5 items averaged to compute scale.

Alcohol: z scores computed for all 7 items, all items reverse coded to reflect higher score = less alcohol use/issues, then 7 items averaged to compute scale.

Tobacco: 1 question, tobac, reverse coded to reflect higher score = absence of/less tobacco use.

Depression: all 5 items retain their raw format as all items are in same metric, 3 items reverse coded to reflect higher score = less depression (2 items not reverse coded are happywk and happymo), then 5 items averaged to compute scale.

Table 2 Scale items, names, and response options

Question # (for F/V)	Variable name	Question text	Values	Construct
Q1	c_juice	Q1-How many times drank juice	1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	Fruit
Q1a	c_juchm	Q1a-How much juice	1-less than 3/4 c. 2-3/4 to 1 1/4 c. 3-1 1/4 to 2 c. 4-more than 2 c.	Fruit
calculated	c_jcfrq	Q1-Times have juice per day		Fruit
calculated	c_jcamt	Q1-Juice portion size		Fruit
calculated	c_jcscr	Q1-Juice score (daily avg. servings)		Fruit

			1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	
Q2	c_fruit	Q2-how many times per mo/wk/day did you eat fruit	1-less than 1 med fruit or 1/2 c. 2-1 med fruit or 1/2 c. 3-2 med fruits or 1 c. 4-more than 2 med fruits or 1 c.	Fruit
Q2a	c_frthm	Q2a-total amount of fruit per mo/wk/day		Fruit
calculated	c_ffrq	Q2-Times have fruit per day		Fruit
calculated	c_ftamt	Q2-Fruit portion size		Fruit
calculated	c_ftscr	Q2-Fruit score		Fruit
			1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	
Q3	c_lett	Q3-how often did you eat lettuce.	1-about 1/2 c. 2-about 1 c. 3-about 2 c. 4-more than 2 c.	Vegetables
Q3a	c_letthm	Q3a-how much lettuce salad.		Vegetables
calculated	c_ltfreq	Q3-Times have lettuce per day		Vegetables
calculated	c_ltamt	Q3-Lettuce portion size		Vegetables
calculated	c_ltsr	Q3-Lettuce score (daily avg. servings).		Vegetables
			1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	
Q4	c_fr fry	Q4-how often did you eat french fries.	1-smaller order or less 2-medium order 3-large order 4-super size order or more	Vegetables
Q4a	c_fryhm	Q4a-how much fries.		Vegetables
calculated	c_fr fry	Q4-Times have fries per day		Vegetables
calculated	c_framt	Q4-Fries portion size		Vegetables
calculated	c_frscr	Q4-French fry score (daily avg. servings).		Vegetables

			1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	
Q5	c_potat	Q5-how often did you eat non fried potatoes.		Vegetables
Q5a	c_pothm	Q5a-how much non fried potatoes.	1-1 sm or less (1/2 c. or less) 2-1 med (1/2 to 1 c.) 3-1 large (1 to 1 1/2 c.) 4-2 med or more (1 1/2 c. or more)	Vegetables
calculated	c_pofrq	Q5-Times have non-fried potatoes per day		Vegetables
calculated	c_poamt	Q5-Potato portion size		Vegetables
calculated	c_poscr	Q5-Non-fried potatoes score (daily avg. servings).		Vegetables
			1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	
Q6	c_beans	Q6-how often did you eat cooked dried beans.		Vegetables
Q6a	c_bnshh	Q6a-how much beans.	1-1/2 c. or less 2-1/2 to 1 c. 3-1 to 1 1/2 c. 4-1 1/2 c. or more	Vegetables
calculated	c_bnfrq	Q6-Times have beans per day		Vegetables
calculated	c_bnamt	Q6-Beans portion size		Vegetables
calculated	c_bnschr	Q6-Cooked dried beans score (daily avg. servings).		Vegetables
			1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	
Q7	c_oveg	Q7-how often did you eat other vegetables over last month		Vegetables
Q7a	c_veghm	Q7a-total amount vegies each time	1-1/2 c. or less 2-1/2 to 1 c. 3-1 to 2 c. 4-2 c. or more	Vegetables
calculated	c_ovfrq	Q7-times have other veggies per day		Vegetables
calculated	c_ovamt	Q7-other veggies portion size		Vegetables
calculated	c_ovscr	Q7-other veggies score		Vegetables

			1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	
Q8	c_tomat	Q18-how often did you eat tomato sauce.		Vegetables
Q8a	c_tomhm	Q8a-total amt.of tomato sauce eaten.	1-1/4 c. 2-1/2 c. 3-1 c. 4-more than 1 c.	Vegetables
calculated	c_tmfrq	Q8-Times have tomato sauce per day		Vegetables
calculated	c_tmamt	Q8-Tomato sauce portion size		Vegetables
calculated	c_tmscr	Q8-tomato sauce score (daily avg. servings).		Vegetables
			1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	
Q9	c_vsoup	Q9-how often did you eat vegetable soup.		Vegetables
Q9a	c_vsphm	Q9a-total amt.of vegetable soup eaten.	1-less than 1 c. 2-1 to 2 c. 3-2 to 3 c. 4-more than 3 c.	Vegetables
calculated	c_vsfrq	Q9-Times have vegie soup per day		Vegetables
calculated	c_vsamt	Q9-Vegie soup portion size		Vegetables
calculated	c_vsscr	Q9-vegetable soup score (daily avg. servings).		Vegetables
			1-Never 2-1 to 3x last month 3-1 to 2x/week 4-3 to 4x/week 5-5 to 6x/week 6-1x/day 7-2x/day 8-3x/day 9-4x/day 10-5 or more x/day	
Q10	c_vmixt	Q10-how often did you eat mixtures with veggies.		Vegetables
calculated	c_frsrv	Avg. servings of fruit per day - sum all fruit scores		Fruit
calculated	c_vgsrv	Avg.servings vegies per day -sum all veg scores		Vegetables
calculated	c_fvsrv	total avg. servings of fruit and veggies per day		Fruits//vegetables

slpsat	In the past 7 days I was satisfied with my sleep	1-Not at all 2- 3- 4-Somewhat 5- 6- 7-Very much	sleep quality
slp7qly	In the past week my sleep quality was	1-Very poor 2- 3- 4-Fair 5- 6- 7-Very good	sleep quality
slptrbl	In the past 7 days how often have you had trouble sleeping	0-Never 1-Rarely 2-Sometimes 3-Often 4-Always	sleep quality
slpqual	During past month how would you rate your sleep quality overall	0-Very good 1-Fairly good 2-Fairly bad 3-Very bad	sleep quality
amt	In past month, avg. hours of sleep during each sleep period (taken from vigilance questionnaire)	open-ended	sleep quantity
slpenuf	In the past 7 days how often have you gotten enough sleep	0-Never 1-Rarely 2-Sometimes 3-Often 4-Always	sleep quantity
slpavg	In the past month, how many hours of sleep did you average in a 24 hr period?	1- Less tha 4 hrs 2- 4-5 hours 3- 6-7 hours 4- 7-8 hours 5- 9 or more hours	sleep quantity
d_genhl	In general, would you say your health is	1-Excellent 2-Very good 3-Good 4-Fair 5-Poor	SF-36: general health
d_sick	how true/false: I seem to get sick easier than other	1-Definitely true 2-Mostly true 3-Don't know 4-Mostly false 5-Definitely false	SF-36: general health
d_hlth	how true/false: I am as healthy as anybody	1-Definitely true 2-Mostly true 3-Don't know 4-Mostly false 5-Definitely false	SF-36: general health
d_worse	how true/false: I expect my health to get worse	1-Definitely true 2-Mostly true 3-Don't know 4-Mostly false 5-Definitely false	SF-36: general health

d_excel	how true/false: my health is excellent	1-Definitely true 2-Mostly true 3-Don't know 4-Mostly false 5-Definitely false	SF-36: general health
strwork	I feel significant stress at work	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	stress self
strhome	Worrying about work issues makes it hard to relax at home	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	stress self
strjob	Overall I feel like there is too much stress in my job	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	stress self
imngstr	In general I manage stress in a healthy way	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	stress self
fastfd	On average how often do you eat fast food	0-Hardly ever 1-2-3 times a month 2- 2-3 times a week 3-One or more times a day	healthy eating self
hlthffd	I make healthy choices when ordering fast food	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	healthy eating self
hlthres	I select healthy food items when eating at restaurants	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	healthy eating self

me5fv	In general I eat 5+ servings of f/v per day	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	healthy eating self
melowft	In general I eat a low-fat diet	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	healthy eating self
exhrd	How many days per wk did you exercise or take part in hard physical activities	0-7 days per wk	physical activity self
exmodr	How many days per wk did you exercise or take part in moderate physical activities	0-7 days per wk	physical activity self
exstrng	How many days per week did you exercise to strengthen or tone muscles	0-7 days per wk	physical activity self
exsweat	In a typical wk how many days do you take part in any phys activity long enough to work up a sweat	0-7 days per wk	physical activity self
ex30m	I exercise for 30 minutes almost every day	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	physical activity self
alcone	In past 30 days how frequently do you have at least one alcoholic drink	0-Never 1-About once a month 2-Several times per month 3-About once a week 4-Several times per week 5-Almost every day	alcohol
alcsevl	In past 30 days how frequently do you have several drinks in one sitting	0-Never 1-About once a month 2-Several times per month 3-About once a week 4-Several times per week 5-Almost every day	alcohol
alcbuzz	In past 30 days how frequently do you drink to the point of getting buzzed	0-Never 1-About once a month 2-Several times per month 3-About once a week 4-Several times per week 5-Almost every day	alcohol
alcdrnk	in past 30 days how frequently do you drink to the point of getting drunk	0-Never 1-About once a month 2-Several times per month 3-About once a week 4-Several times per week 5-Almost every day	alcohol

alcglt	How often during last 30 days have you had feelings of guilt or remorse after drinking	0-Never 1-Once 2-Two or three times 3-Weekly 4-More than once a week	alcohol
alfam	In the last 6 mo, my family or friends have been concerned with my drinking	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	alcohol
alcquit	In the last 6 mo, I have tried to quit drinking	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	alcohol
tobac	Do you currently use tobacco (cigarettes, cigars, pipe or chewing tobacco) Mark one.	0-No and never was regular user 1-No and quit more than 6 mo ago 2-No and quit less than 6 mo ago 3-Yes current user (1 pack/day or less) 4-Yes, current user (>1 pack/day)	tobacco
happymo	Overall in the last month I have been happy	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	depression
happywk	I feel happy to go to work each day	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	depression
depr7dy	In the past 7 days, I felt depressed	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	depression
deprwk	Feelings of depression interfere with my work	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree 6-Agree 7-Strongly agree	depression
jobdepr	Overall my job makes me feel depressed	1-Strongly disagree 2-Disagree 3-Slightly disagree 4-No Opinion 5-Slightly agree	depression

6-Agree
7-Strongly agree

Table 3. Baseline, 6-month, 12-month, and 24-month follow-up Reliability of Constructs Measured in Questionnaire

Construct	Baseline (Wave 1)		6 Months (Wave 2)		12 Months (Wave 3)		24 Months (Wave 4)	
	Cronbach's α		Cronbach's α		Cronbach's α		Cronbach's α	
	Raw	Std.	Raw	Std.	Raw	Std.	Raw	Std.
Fruit Consumption*	0.048	0.057	0.381	0.431	0.154	0.198	0.007	0.010
Vegetable Consumption*	0.428	0.526	0.390	0.494	0.503	0.583	0.407	0.496
Fruit/Vegetable Consumption*	0.499	0.533	0.465	0.521	0.531	0.572	0.439	0.473
Healthy Eating Self	0.823	0.823	0.816	0.817	0.815	0.814	0.783	0.784
Physical Activity	0.888	0.887	0.879	0.882	0.905	0.906	0.911	0.911
Sleep Quality	0.914	0.914	0.908	0.907	0.886	0.886	0.909	0.906
Sleep Quantity	0.820	0.817	0.811	0.811	0.812	0.816	0.796	0.797
SF36: General Health	0.770	0.767	0.764	0.761	0.770	0.767	0.742	0.739
Stress Self	0.781	0.781	0.792	0.788	0.780	0.776	0.777	0.774
Tobacco Use	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Alcohol Consumption	0.810	0.809	0.786	0.790	0.798	0.800	0.790	0.797
Depression	0.833	0.834	0.826	0.829	0.839	0.840	0.833	0.834

* The construct is an index and Cronbach's α is not interpreted as a measure of internal consistency because individual items are summed to form the index.

Table 4. Baseline, 6-month, 12-month, and 24-month follow-up Test-Retest Correlations

Construct	Wave 1 - Wave 2	Wave 1 - Wave 3	Wave 2 - Wave 3	Wave 1 – Wave 4	Wave 2 – Wave 4	Wave 3 – Wave 4
	Test-Retest Correlation	Test-Retest Correlation	Test-Retest Correlation	Test-Retest Correlation	Test-Retest Correlation	Test-Retest Correlation
Fruit Consumption	0.485	0.451	0.597	0.486	0.504	0.609
Vegetable Consumption	0.480	0.450	0.560	0.539	0.466	0.434
Fruit/Vegetable Consumption	0.554	0.539	0.710	0.565	0.547	0.626
Healthy Eating Self	0.733	0.726	0.808	0.681	0.683	0.728
Physical Activity Self	0.632	0.603	0.727	0.581	0.601	0.674
Sleep Quality	0.652	0.581	0.591	0.533	0.520	0.536
Sleep Quantity	0.652	0.640	0.630	0.590	0.593	0.609
SF36: General Health	0.743	0.719	0.790	0.683	0.688	0.715
Stress Self	0.732	0.738	0.788	0.632	0.709	0.750
Tobacco Use	0.909	0.875	0.873	0.850	0.836	0.855
Alcohol Consumption	0.835	0.778	0.866	0.784	0.788	0.844
Depression	0.701	0.664	0.707	0.658	0.701	0.729
Systolic Blood Pressure	N/A	0.649	N/A	0.665	N/A	0.602
Diastolic Blood Pressure	N/A	0.674	N/A	0.695	N/A	0.616
BMI	N/A	0.955	N/A	0.952	N/A	0.932

Note: Systolic blood pressure, Diastolic blood pressure, and BMI data were not collected at Wave 2 (6 Months).

Table 5. Matrix of Evolving and Refined Themes and Representative Quotes from group interviews

Finalized Durability Influences	Representative Quotes
Individuals recalled information in each content area	<p>“I agree 100% with the sleep information and the effect it has on the heart, that was news to me. I knew it was important but not that important, I guess that’s what stood out to me.”</p> <p>“I think for the games and activities stood out – um the one with the butter, where we measured things out.”</p> <p>“...Just being more aware of adding more vegetables and knowing that that small change, even just adding one more vegetable a day, can help your health.”</p> <p>“... a small change can make a difference, like just losing 5 or 6 pounds can actually change your blood pressure.”</p>

	<p>“The education that took place, new information, just sitting down and talking about it just raises your awareness. Like ‘oh yeah, I need to do that.”</p> <p>“I think, in my personal opinion, I think that SHIELD was great for the office as a whole for people to recognize the education piece. For a lot of people it opened up their eyes to their habits.”</p> <p>“For me, I think I became more aware of the damage that it can do to your body by not getting proper sleep. I wasn’t aware of how the heart kind of repairs itself during the time of sleep. I was totally unaware of that.”</p> <p>“I think wearing those pedometers that we were given was actually very surprising... I was actually surprised at how much I didn’t move, so kind of an awareness or walk up call for me...”</p> <p>“I think [SHIELD] was a good start for me because it made me realize a number of things, such as how I needed to exercise more, how I needed to exercise, period. And, you know, how I need t eat better and portion control and just a number of things.”</p>
<p>Differential ongoing reinforcement of behaviors</p>	<p>“...we would bug the other people in our group about did you eat your vegetables today. . “</p> <p>“I think there has been an influence with SHIELD. Our gatherings, our office gatherings... people want fruit.”</p> <p>“[Daily walks] is one of the things that [we] tried to incorporate. One, it’s a stress reducer, and two, to get away from the office and talk. Even if it is business stuff. At least close to a mile walk each day and around mid-day to break up the monotony and stretch out the legs. It’s different and it’s work out pretty well.”</p> <p>“...with sleep you can get the least impact on group accountability, you can go like let’s go for a walk or let’s go get this kind of lunch, but you can’t be like you need to go to bed.”</p> <p>“...so compared to exercise and eating, it (sleep) is harder to control? Yeah”</p>
<p>Accountability: need for external motivation once group stopped</p>	<p>“I liked the program, I just wish there was an accountability, either an accountability piece or accountability and an external facilitator so we were accountable to somebody that was going to be checking our work or whatever.”</p> <p>“You work in a group and it kinda gives you a bit of accountability to do things. I know I haven’t been a part of those accountability things, so I probably an not as good as I should be.”</p> <p>“And the group dynamic too. I think that’s super important too because we are not only there to support each other and make better decisions and healthier decisions, but holding each other accountable too. I think it’s pretty important so I think that was something that worked.”</p>

	<p>“...I went back to my old habits when we weren’t meeting and talking about it. It was easier for me to slip back into my old ways when I didn’t have group participation holding me accountable.... I think I am one of those people that need structure. Without structure I easily get off track.”</p> <p>I noticed when you get away from the program and not meeting, it is more difficult to do that. You’re kind of on your own. You have knowledge, but who is going to make the choice and who is going to hold me accountable?”</p>
<p>Competing demands: life events hampered healthy actions</p>	<p>“Lately we’ve had some things happening in our building. We have had Wi-Fi installed new camera systems in and looking at a new software system, so I think we have all of those things going on, um, we tend to not be as conscious about, you know, what we are eating.”</p> <p>“I think its when stress comes that it tend to be the debunker. If I’m late I gotta go, I can get some [food] here, someone will have something. It’s the key roadblock at times.”</p> <p>“...You get stressed out, you just grab for whatever is easiest at the time, you know.”</p> <p>“If I’m being completely honest I made changes initially but I didn’t maintain and I still haven’t gone back to that. I did weight watchers for about 4 and a half years, real successful. But vacation happened, some things happened, and I stopped doing weight watchers and right now I’m not doing so well.”</p> <p>“So for me what is difficult is I have probably read every book there is and all of that about what you should and shouldn’t do and nutrition and blah, blah, blah. But it’s different when you are working all day running around. Go to pick up kids and go from work to activity to activity to activity. You know it’s great to say I’m going to pack my little lunch box and take it all with me, but something happens in the middle of the day. You know the lunch gets left in the car and you come out three hours later and it’s all melted...”</p>

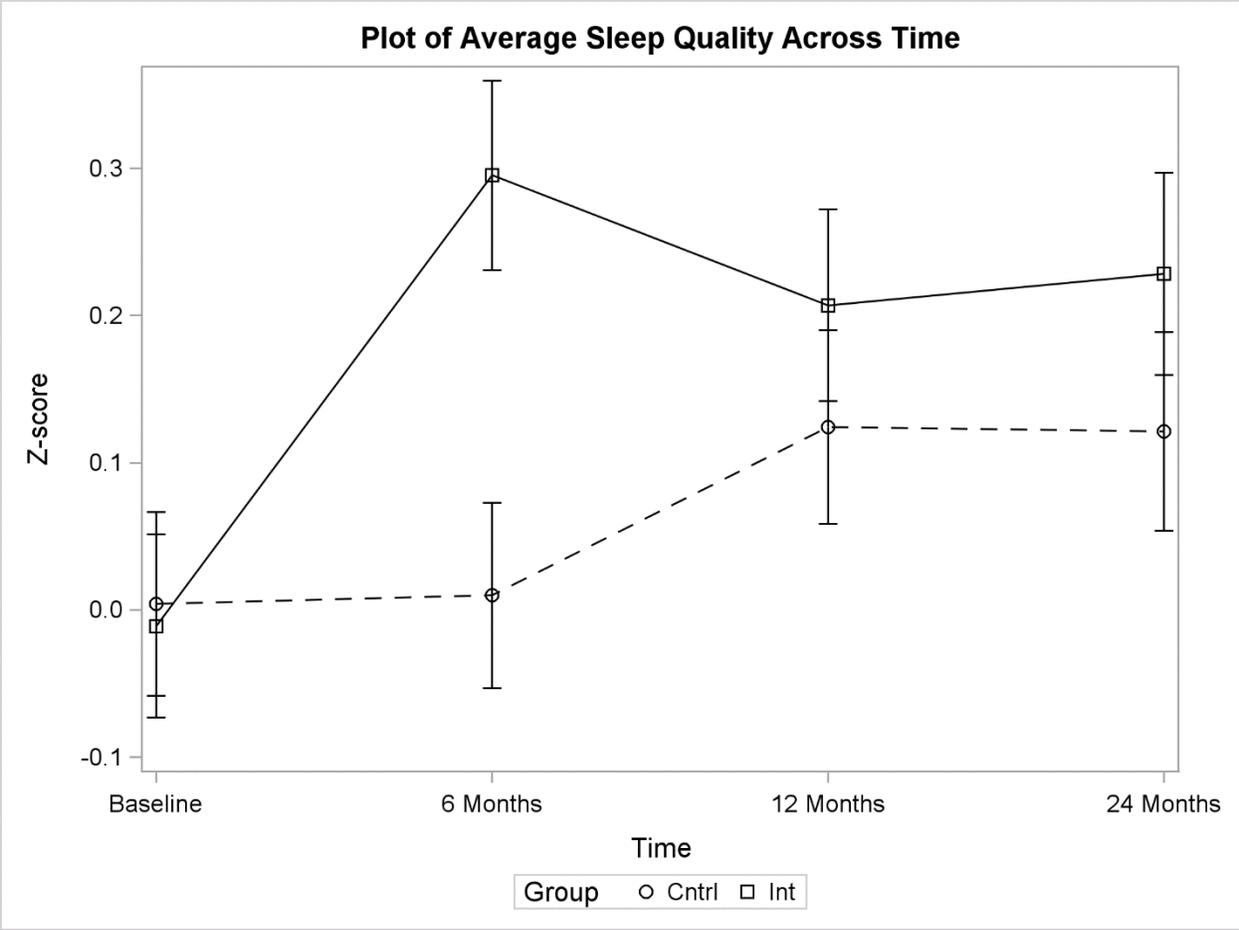


Figure 1. Average sleep quality for the intervention and control groups at each time of measurement with +/- 1 standard error bars. Higher scores indicate higher quality of sleep.