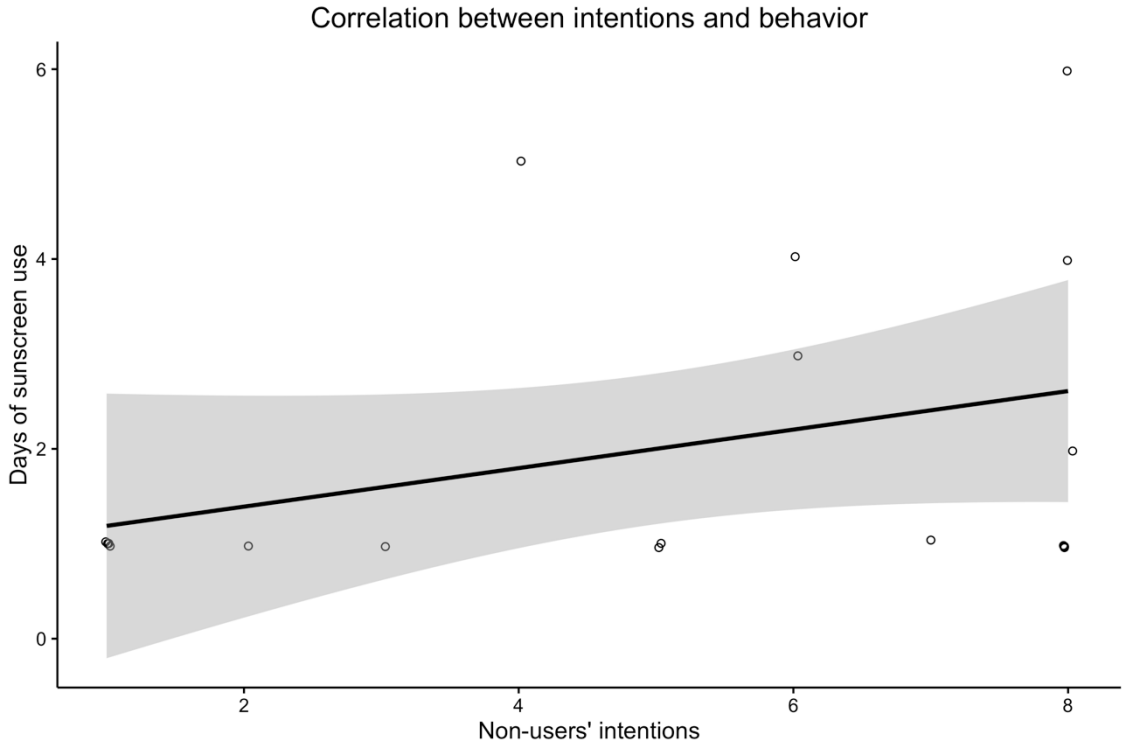
Supplemental materials

Figure S1. Correlation between intentions and behavior for users, $r(17) = .90$, $p = <.001$, vs. non-users, $r(16) = .35$, $p = .075$, $Z_{diff} = 3.08$, $p = .0010$.



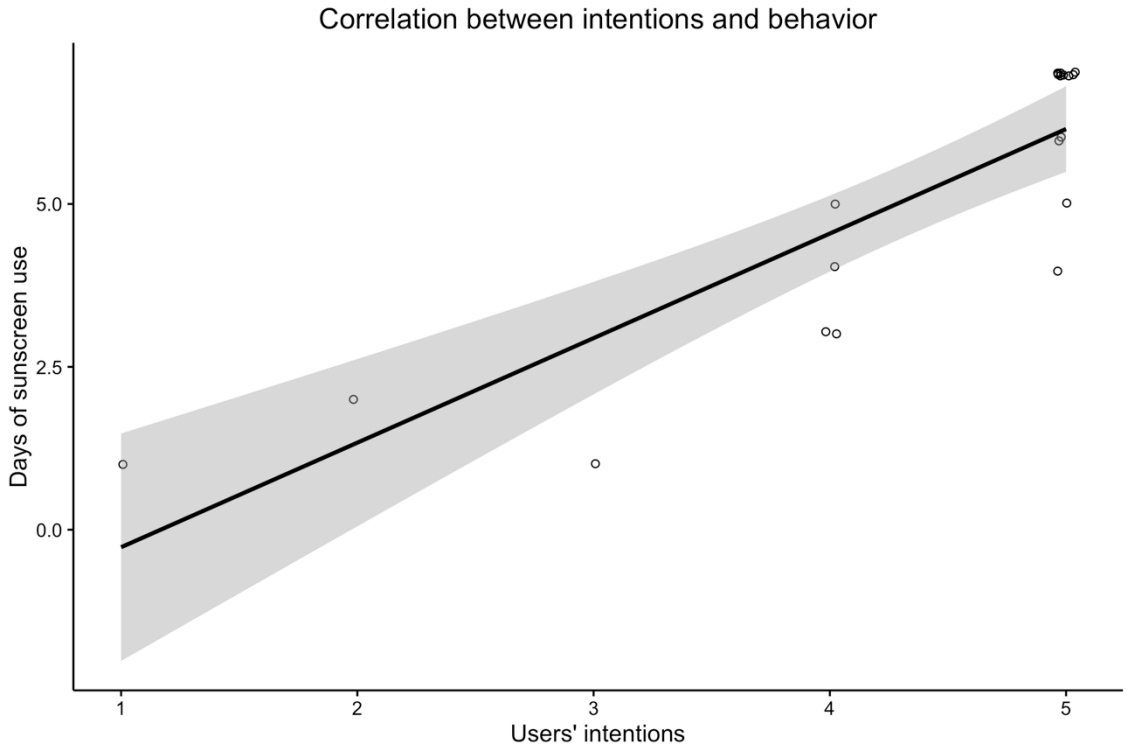
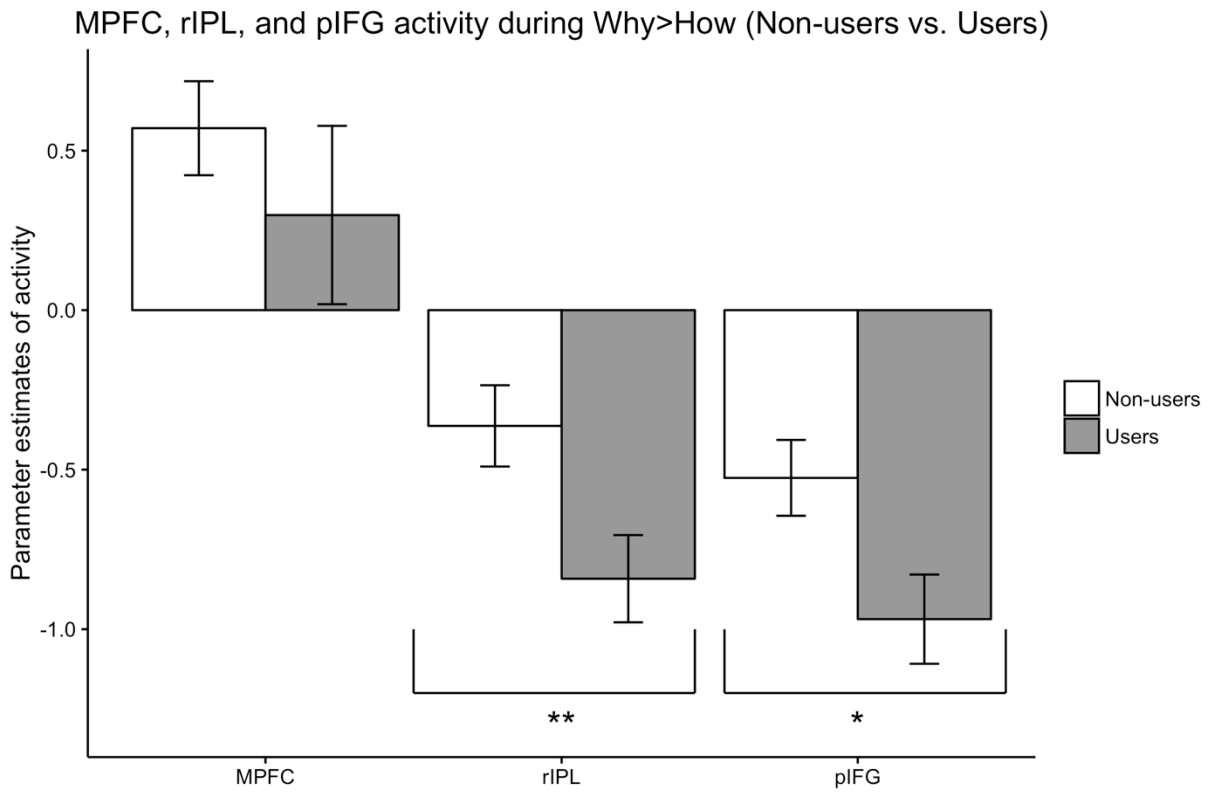


Figure S2. Activity in MPFC, rIPL, and pIFG during Why relative to How messages for users vs. non-users.



Note: † $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table S1
Zero order and part correlations between MPFC activity and sunscreen use

	Why_{gain}>Fact	Why_{gain} > Why_{loss}
Correlation (all)	.19 (p = .13)	.024 (p = .44)
Part correlation (all)	.34 (p = .021)	.30 (p = .036)
Correlation (non-users)	.29 (p = .12)	.13 (p = .30)
Part correlation (non-users)	.46 (p = .027)	.51 (p = .015)
Correlation (users)	-.06 (p = .40)	-.27(p = .14)
Part correlation (users)	-.070 (p = .39)	-.23 (p = .18)

Table S2
Activity during Why_{gain}>Fact messages and Fact>Why_{gain} messages, $p < .005$, $k = 78$[1]

Region	x	y	z	t	voxels
Why_{gain}>Fact					
MPFC	0	38	20	6.864	8668
VLPFC	38	24	-14	5.271	552
PCC	-2	-20	36	8.163	4772
Inferior parietal lobule	-52	-58	40	4.843	474
Inferior parietal lobule	62	-44	48	4.168	364
Fact>Why_{gain}					
pIFG	-44	22	20	6.809	1540
pIFG	42	14	30	5.163	803
Cerebellum	10	-82	-46	4.169	175
Middle occipital gyrus	32	-70	-6	7.584	6197
Inferior temporal gyrus	-54	-54	-16	8.529	5144

[1] This threshold corresponds to a false discovery rate of 5% as estimated by a Monte Carlo simulation implemented using 3dClustSim in AFNI.

Table S3
Activity during Why_{loss}>Fact messages and Fact>Why_{loss} messages, $p < .005$, $k = 78$

Region	x	y	z	t	voxels
Why_{loss}>Fact					
MPFC	-4	56	2	7.412	3413
VLPFC	44	22	-8	4.737	429
Anterior insula	44	0	-6	3.644	92
Anterior insula	-44	-6	-6	4.622	141
Precuneus	-4	-68	38	4.438	542
PCC	2	-18	38	7.393	1439
Inferior parietal lobule	-62	-52	38	4.237	165
Fact>Why_{loss}					
pIFG	-44	6	30	6.177	1623
pIFG	48	2	28	5.404	713
Inferior temporal gyrus	-50	-62	-14	8.014	13037
Thalamus	-24	-28	-2	5.547	235

Table S4
Activity during Why_{gain}>Why_{loss} messages, $p < .005$, $k = 78$

Region	x	y	z	t	voxels
MPFC	-4	46	-6	5.273	163
Cuneus	-12	-80	12	3.766	102
Cuneus	6	-82	12	3.706	140
dACC	-10	24	22	5.637	410
PCC	-2	-32	30	5.506	1153
DLPFC	-34	22	44	3.677	173

Table S5
Activity during How>Fact messages and Fact>How messages, $p < .005$, $k = 78$

Region	x	y	z	t	voxels
How>Fact					
pIFG	-50	4	18	5.273	279
rIPL	-58	-62	40	5.976	1622
rIPL	62	-32	50	3.954	197
VLPFC	-34	34	-12	6.081	361
Inferior frontal gyrus	-38	40	10	6.821	485
Caudate	14	6	6	4.482	128
Caudate	-12	6	10	4.783	117
Cingulate gyrus	0	4	36	5.423	155
Angular gyrus	-38	-80	40	6.141	305
Precuneus	-2	-34	50	5.324	646
Superior frontal gyrus	-26	16	60	5.179	759
Fact>How					
Inferior occipital gyrus	36	-68	-10	5.575	1893
Middle occipital gyrus	-36	-94	14	5.710	260
Cuneus	-4	-92	18	5.342	709
Superior parietal lobule	28	-54	52	4.907	612
Superior parietal lobule	18	-60	72	3.519	100

Table S6
Zero order and part correlations between rIPL and pIFG activity during How>Fact and sunscreen use

	rIPL	pIFG
Correlation (all)	.22 (p = .10)	.19 (p = .13)
Part correlation (all)	.35 (p = .016)	.28 (p = .047)
Correlation (non-users)	-.10 (p = .34)	-.11 (p = .33)
Part correlation (non-users)	.29 (p = .12)	.11 (p = .33)
Correlation (users)	.10 (p = .33)	.060 (p = .40)
Part correlation (users)	.15 (p = .28)	.21 (p = .20)
Users vs. non-users (part corr)	p = .33	p = .39

Full post-scan questionnaire

Participant number:

Out of the next 7 days, how many days do you intend to do each of the following? Please enter a number from 0 to 7 in each box. You can estimate a number if you're unsure.

Use sunscreen
Exercise
Floss
Eat vegetables
Get at least 7 hours of sleep
Skip class
Get at least 8 hours of sleep

Over the next 7 days, how many times do you intend to do each of the following? Please enter a number in each box. You can estimate a number if you're unsure.

Use sunscreen
Exercise
Floss
Eat vegetables
Get at least 7 hours of sleep
Skip class
Get at least 8 hours of sleep

Please rate how confident you are that you will do the things described below. You can drag the bar toward “not all all confident” or “very confident” or click on the bar to leave it at neutral; otherwise, no response will be recorded and you will be prompted to give a response.

_____ I will use sunscreen more than I do now.
_____ I will use sunscreen each day.
_____ I will use sunscreen even when I am very busy.
_____ I will use sunscreen even if other people don’t think it is important.
_____ I will use sunscreen even if it is inconvenient.
_____ I will use sunscreen even if it makes my skin feel greasy.

Increasing my use of sunscreen would be:
Foolish-Wise (slider)

Increasing my use of sunscreen would be:
Unpleasant-Pleasant (slider)

Increasing my use of sunscreen would be:
Difficult-Easy (slider)

Increasing my use of sunscreen would be:
Bad-Good (slider)

Increasing my use of sunscreen would be:
Harmful-Beneficial (slider)

Increasing my use of sunscreen would be:
Unhealthy-Healthy (slider)

Sometimes it's hard to pay attention. To what extent were you paying attention to the messages in the scanner? This will have a major impact on how we interpret the brain data in this study, so please be as honest as possible. Your response will be kept anonymous and will not affect your compensation in any way.

_____ -

To what extent did you think the messages you saw in the scanner were:

_____ Personally relevant
_____ Persuasive
_____ Interesting
_____ Important
_____ Memorable
_____ Helpful

Please answer the following questions about the messages you saw in the scanner:
_____ To what extent did the messages persuade you to want to wear sunscreen more than you already do?
_____ To what extent did the messages make you confident that you will increase your sunscreen use?
_____ To what extent are you likely to share the messages with a friend?

Although all the messages in the scanner were presented in the same way, each of them actually falls into 1 of 4 categories of statements: a PRESERVE BEAUTY statement, an AVOID HEALTH RISK statement, a HOW statement, or a FACT statement. Each of these statement types are defined below:

PRESERVE BEAUTY -- A statement that explains how using sunscreen can help your skin remain beautiful/young/healthy.
Example: Wearing sunscreen preserves beautiful skin.

AVOID HEALTH RISK -- A statement that explains how using sunscreen can prevent burns, skin cancer, etc.
Example: Wearing sunscreen protects against skin cancer.

HOW -- A statement that indicates how to use sunscreen effectively.
Example: Rub sunscreen evenly over your skin.

FACT -- A basic statement about sunscreen that doesn't fall into the other 3 categories.
Example: SPF stands for sun protection factor.We know you may not have the messages you saw mentally classified in this way, but try to consider the categories as best you can in answering the following questions.

To what extent did you think the FACT messages were:
_____ Personally relevant
_____ Persuasive
_____ Interesting
_____ Important
_____ Memorable
_____ Helpful

To what extent did you think the HOW messages were:
_____ Personally relevant
_____ Persuasive
_____ Interesting
_____ Important
_____ Memorable
_____ Helpful

To what extent did you think the PRESERVE BEAUTY messages were:
_____ Personally relevant
_____ Persuasive
_____ Interesting
_____ Important
_____ Memorable
_____ Helpful

To what extent did you think the AVOID HEALTH RISK messages were:
_____ Personally relevant
_____ Persuasive
_____ Interesting
_____ Important
_____ Memorable
_____ Helpful

Although all the messages in the scanner were presented in the same way, each of them actually falls into 1 of 4 categories of statements: a PRESERVE BEAUTY statement, an AVOID HEALTH RISK statement, a HOW statement, or a FACT statement. Each of these statement types are defined below:

PRESERVE BEAUTY -- A statement that explains how using sunscreen can help your skin remain beautiful/young/healthy.
Example: Wearing sunscreen preserves beautiful skin.

AVOID HEALTH RISK -- A statement that explains how using sunscreen can prevent burns, skin cancer, etc.
Example: Wearing sunscreen protects against skin cancer.

HOW -- A statement that indicates how to use sunscreen effectively.
Example: Rub sunscreen evenly over your skin.

FACT -- A basic statement about sunscreen that doesn't fall into the other 3 categories.
Example: SPF stands for sun protection factor.We know you may not have the messages you saw mentally classified in this way, but try to consider the categories as best you can in answering the following questions.

Please answer the following questions about the FACT messages:
_____ To what extent did the FACT messages persuade you to want to wear sunscreen more than you already do?
_____ To what extent did the FACT messages make you confident that you will increase your sunscreen use?
_____ To what extent are you likely to share the FACT messages with a friend?

Please answer the following questions about the HOW messages:
_____ To what extent did the HOW messages persuade you to want to wear sunscreen more than you already do?
_____ To what extent did the HOW messages make you confident that you will increase your sunscreen use?
_____ To what extent are you likely to share the HOW messages with a friend?

Please answer the following questions about the PRESERVE BEAUTY messages:
_____ To what extent did the PRESERVE BEAUTY messages persuade you to want to wear sunscreen more than you already do?
_____ To what extent did the PRESERVE BEAUTY messages make you confident that you will increase your sunscreen use?
_____ To what extent are you likely to share the PRESERVE BEAUTY messages with a friend?

Please answer the following questions about the AVOID HEALTH RISK messages:
_____ To what extent did the AVOID HEALTH RISK messages persuade you to want to wear sunscreen more than you already do?
_____ To what extent did the AVOID HEALTH RISK messages make you confident that you will increase your sunscreen use?
_____ To what extent are you likely to share the AVOID HEALTH RISK messages with a friend?

I have control over my sunscreen use.
_____ -

If you have any comments about the study overall, please provide them here.