



Toward more accurate behavior frequency reporting

THE BENEFITS OF UNDERSTANDING THE INTENTION-BEHAVIOR GAP



How often do you intend to workout?

HAVE A NUMBER IN YOUR HEAD? SIT WITH THAT ANSWER.

Now, think about how often you actually workout. Are those numbers different? If they are—and if you are one of the many among us who struggle to workout as often as they intend to—then you are experiencing what is known as *the intention-behavior gap*.

Surveys often ask respondents to report behavior frequency, as understanding how often people engage in various behaviors has broad utility and important implications, in particular for consumer purchase and usage behavior.

Yet despite its utility, there are often accuracy issues with self-reported behavior frequency in surveys. In this piece, we will explore the theoretical underpinnings of these inaccuracies, as well as a method for reducing them by exploring the powerful role of intention.



*We judge ourselves by
our intentions and others
by their actions.*

STEPHEN COVEY

Part I: Explaining errors in frequency reporting

WHY IS FREQUENCY REPORTING IMPORTANT?

Claimed, or self-reported, behavior frequency is a ubiquitous measurement in online survey research. It serves a broad utility for insights seekers looking to understand the consumer landscape, and can be instrumental in:

- Estimating potential product usage and predicting purchase frequency and volume
- Identifying changing behavioral trends that may have implications for product development
- Segmenting audiences into behavior frequency groups that yield more actionable insights
- Developing critical inputs for volumetric analyses focused on things like price optimization

Think of it this way:

If consumers report they're brushing their teeth three times a day, we can estimate they use about 90 servings of toothpaste per month. This suggests they'll replenish an 80-use tube of toothpaste at least once a month. But if they report brushing once a day, they may be replenishing only once every two, or even three, months. That's because the replenishment rate is heavily dependent on behavior frequency.



Let's talk about over-reporting

Despite the broad utility of quantifying behavior frequency across various consumer activities, there's strong empirical evidence of significant measurement error in claimed behavior frequency¹. Often, the most over-reported behaviors are the ones that have salient normative standards, or ones for which people have strong personal aspirations. This over-reporting has been documented across a number of different behavior domains, including:

This over-reporting has been documented for a number of different behaviors, including:

- Voting²: Citizens self-report more frequent and consistent voting behavior than public voting records show.
- Church attendance³: Church-goers self-report more frequent church attendance than church attendance records suggest.
- Exercise⁴: University students report more frequent exercise than is supported by sports facility records.

1. Bernstein, R., Chadha, A., & Montjoy, R. (2001). Overreporting voting: Why it happens and why it matters. *Public Opinion Quarterly*, 65(1), 22-44.
Shephard, R. J. (2003). Limits to the measurement of habitual physical activity by questionnaires. *British journal of sports medicine*, 37(3), 197-206.

2. Holbrook, A. L., & Krosnick, J. A. (2010). Social desirability bias in voter turnout reports: Tests using the item count technique. *Public Opinion Quarterly*, 74(1), 37-67.

3. Hadaway, C. K., Marler, P. L., & Chaves, M. (1998). Overreporting church attendance in America: Evidence that demands the same verdict. *American Sociological Review*, 63(1), 122-130.

4. Bassett Jr, D. R. (2000). Validity and reliability issues in objective monitoring of physical activity. *Research quarterly for exercise and sport*, 71(sup2), 30-36.
Brenner, P. S., & DeLamater, J. D. (2014). Social desirability bias in self-reports of physical activity: is an exercise identity the culprit?. *Social Indicators Research*, 117, 489-504.





Why does this happen?

ACQUIESCENCE BIAS

Common explanations for such over-reporting often point to acquiescence bias, which influences survey respondents to be agreeable and a “good partner” to the interviewer by supplying the information they think the interviewer wants to receive⁵.

SOCIAL DESIRABILITY BIAS

Other research suggests that social desirability is at play, whereby survey respondents are overly guided by socially acceptable or politically correct norms when reporting behavior frequency⁶. Both of these biases are rooted in impression management – the powerful set of behaviors and processes we engage in, as social creatures, to manage how others perceive us.

5. Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903.

6. Stocké, V. (2007). Response privacy and elapsed time since election day as determinants for vote overreporting. *International Journal of Public Opinion Research*, 19(2), 237–246.

But here's the thing:

Although acquiescence bias and social desirability are undoubtedly contributors to behavior over-reporting, it is unlikely that they fully explain this robust effect. In fact, over-reporting is observed under even the most private data collection modes, which challenges the notion that behavior over-reporting is rooted solely in impression management mechanisms⁷. This shows the value in considering the role of another pervasive psychological phenomenon: the intention-behavior gap.

7. Kreuter, F., Presser, S., & Tourangeau, R. (2008). Social desirability bias in CATI, IVR, and web surveys: The effects of mode and question sensitivity. *Public opinion quarterly*, 72(5), 847-865.

The intention–behavior gap

Foundational psychological theory posits that our intentions are the most direct, proximal cause of our behaviors^{8,9}. However, despite the centrality of intention to behavior, there’s often a discrepancy between what people intend to do and what they actually follow through with.

Coined “the intention–behavior gap”, this discrepancy is well documented in social and health psychology, as well as other behavioral sciences¹⁰. It can occur for a variety of reasons, including a lack of motivation, time, or resources to follow through with an intended behavior.

Here’s an example

Many people have specific intentions around how often they exercise. These intentions may be driven by external factors like societal standards or doctor recommendations. They may also be driven by internal factors, like intrinsic motivation to live a healthy life. Either way, despite their good intentions, many people fail to exercise as often as they intend. Think of the thousands of products that have been launched—the entire industries that have been spun up to address this gap—yet it remains an experience that many of us have shared or observed.

8. Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179–211.

9. Ajzen, I. & Fishbein, M (1980). *Understanding attitudes and predicting social behavior*. Englewood cliffs.

10. Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British journal of social psychology*, 40(4), 471–499.

Disentangling intentions and behaviors

Consider that In a typical survey set up, claimed behavior frequency is measured in a singular way—“On average, how often do you [x]?” Without further opportunity to provide nuance around intended frequency and actual frequency, it’s possible that survey takers conflate normative standards, personal aspirations, and actual behavior frequency in their response. Said another way, people may just as often be telling us what they intend to do rather than what they actually do.

What if, instead, we gave respondents an opportunity to disentangle their intentions and behaviors, specifically by allowing them to share their aspirations or intentions separately from their behavior? Would they then be more likely to give a more accurate reporting of their actual behavior frequency? We ran an experiment to find out...



The problem with most measurement situations is that without the normal situational constraints, it becomes very easy for a respondent to give us that idealized identity picture which may only seldom be realized in normal interactional situations.

SOCIOLOGIST PETER J. BURKE

Part II: The experiment

OVERVIEW

In the following experiment, we sought to increase the accuracy of claimed behavior frequency by disentangling intended behavior frequency from actual behavior frequency, measuring each separately.

HYPOTHESIS:

We hypothesized that by giving respondents the opportunity to separately express how often they *aspire or intend to engage in a behavior*, they will report *actual behavior frequency* more accurately in a separate question.

METHODOLOGY:

A 5-minute online survey on the aytm platform in which respondents were asked to self-report behavioral frequency across a number of aspirational and normative behaviors.

TARGET AUDIENCE

N|3,200 US Gen Pop Adults, Ages 18+, balanced to match the US population on age and gender.



Experimental design

There were four cells in this study: One control cell and three experimental cells exploring different implementations of the hypothesis. Each respondent was randomly assigned to one of the 4 cells of the experiment.



A. CONTROL: BEHAVIOR ONLY

In the control condition, respondents were simply asked to self-report behavior frequency. This condition was meant to reflect researchers' typical approach to measuring claimed behavior frequency:

- Across 17 domains, respondents were asked “How often, on average, do you [X]?”

B. INTENTION + GAP DESCRIPTION + BEHAVIOR

In the first implementation of the hypothesis, we took the most direct approach to teasing apart intentions from behaviors:

- First we asked: “How often do you intend to [X]?”
- Then we described the intention-behavior gap: “It can be hard to do things as often as we intend – because we’re short on time, must prioritize other things, or because we forget.”
- And finally, we measured actual behavior: “Bearing that in mind, how often, on average, do you actually [X]?”

C. INTENTION + BEHAVIOR (NO GAP DESCRIPTION)

Next, we were interested if respondents needed to have the gap described in order to disentangle intentions and behaviors, or if the mere expression of intended behavior frequency would suffice.

- First we asked: “How often do you intend to [X]?”
- Then we measured actual behavior: “How often, on average, do you actually [X]?”

D. GAP DESCRIPTION + BEHAVIOR (NO INTENTION)

Finally, we completed the design by testing whether respondents needed to express intentions, or simply needed to hear the intention-behavior gap described beforehand.

- First we described the intention-behavior gap: “It can be hard to do things as often as we intend – because we’re short on time, must prioritize other things, or because we forget.”
- Then we measured actual behavior: “Bearing that in mind, how often, on average, do you actually [X]?”

Respondents randomly assigned to one of 4 cells:



	Control: Behavior only A.	Intention + gap description + behavior B.	Intention + behavior (no gap description) C.	Gap description + behavior (no intention) D.
Intention Expression	N/A	How often do you intend to...?	How often do you intend to...?	N/A
Gap Described	N/A	It can be hard to do things as often as we intend—because we’re short on time, must prioritize other things, or because we forget.	N/A	It can be hard to do things as often as we intend—because we’re short on time, must prioritize other things, or because we forget.
Behavior Expression	How often, on average, do you...?	Bearing that in mind, how often, on average, do you actually...?	How often, on average, do you actually...?	Bearing that in mind, how often, on average, do you actually...?

Dependent measures

Respondents reported behavior frequency across 17 domains. These domains included a mix of personal and household care behaviors, wellness behaviors, and leisure behaviors. We specifically sought to include behaviors for which there are normative standards and/or personal aspirations (and in many cases, both), as well as a wide range of behavioral cadences—from things done more frequently, like brushing one’s teeth, to things done less frequently, like going to see a movie in the theaters.

BEHAVIOR	SCALE
Brush your teeth	1
Wash your face	1
Cook a meal	1
Floss your teeth	1
Eat vegetables	1
Wash your hair	2
Wear sunscreen	2
Do laundry/wash clothes	2
Use body moisturizer	2
Use facial moisturizer	2
Exercise	2
Meditate	2
Make your bed	2
Take vitamins and/or supplements	2
Clean your home (Dust, vacuum, clean bathroom)	3
Spend time in nature	3
See a movie in a theater	4

SCALE 1

- 3 times a day or more often
- 2 times a day
- Once a day
- Most days of the week
- A few days of the week
- Once a week
- Less often than once a week
- N/A – I don’t do this regularly/at all

SCALE 2

- Every day
- Most days of the week
- A few days of the week
- Once a week
- 2-3 times a month
- Less often than once a month
- N/A – I don’t do this regularly/at all

SCALE 3

- Multiple times a week
- Once a week
- 2-3 times a month
- Once a month
- Once every 2-3 months
- Less often than every 2-3 months
- N/A – I don’t do this regularly/at all

SCALE 4

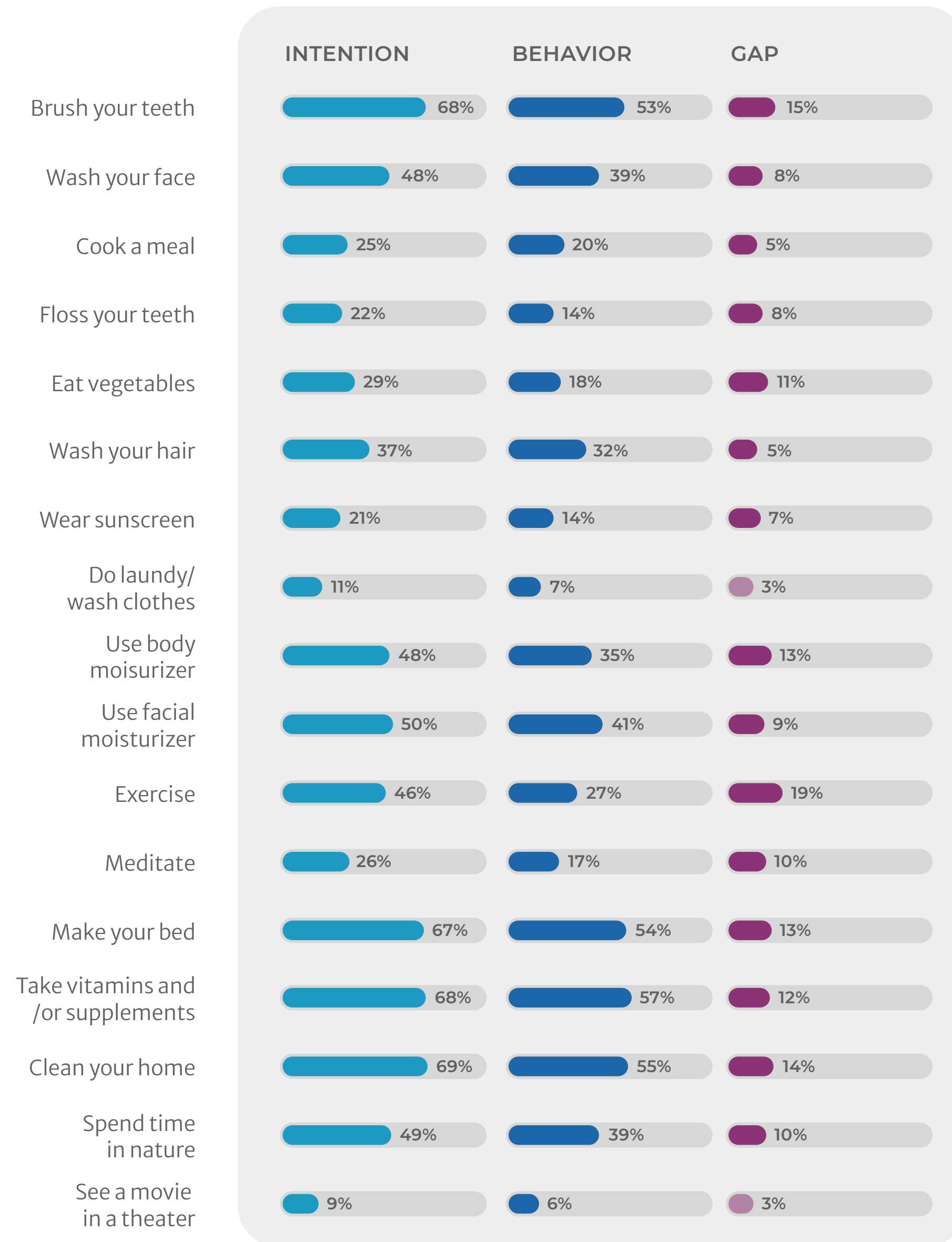
- Once a week or more often
- 2-3 times a month
- Once a month
- Once every 2-3 months
- 1-2 times a year
- Less often than once a year
- N/A – I don’t do this regularly/at all

Results

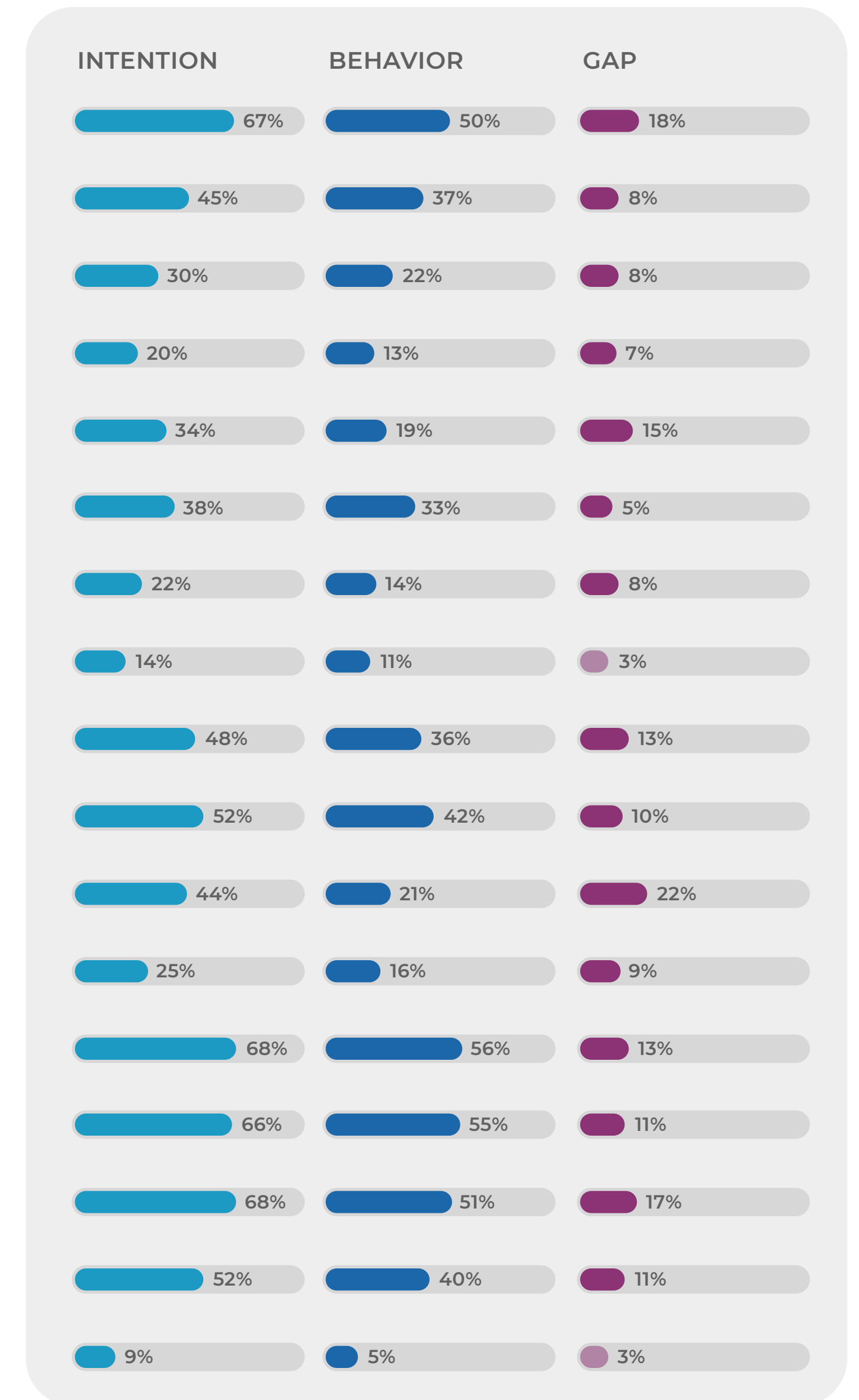
ESTABLISHING THE INTENTION-BEHAVIOR GAP

As a first step in the analysis, we sought to ensure that the behavior domains under investigation were all areas in which the intention-behavior gap exists. We compared intended frequency and actual frequency in Cells B and C across all 17 domains, using both repeated measures t-tests and z-tests on netted top 2 box scores. Results were the near-identical for both analysis approaches; top 2 box nets are reported for ease of interpretation:

B. INTENTION + GAP DESCRIPTION + BEHAVIOR



C. INTENTION + BEHAVIOR



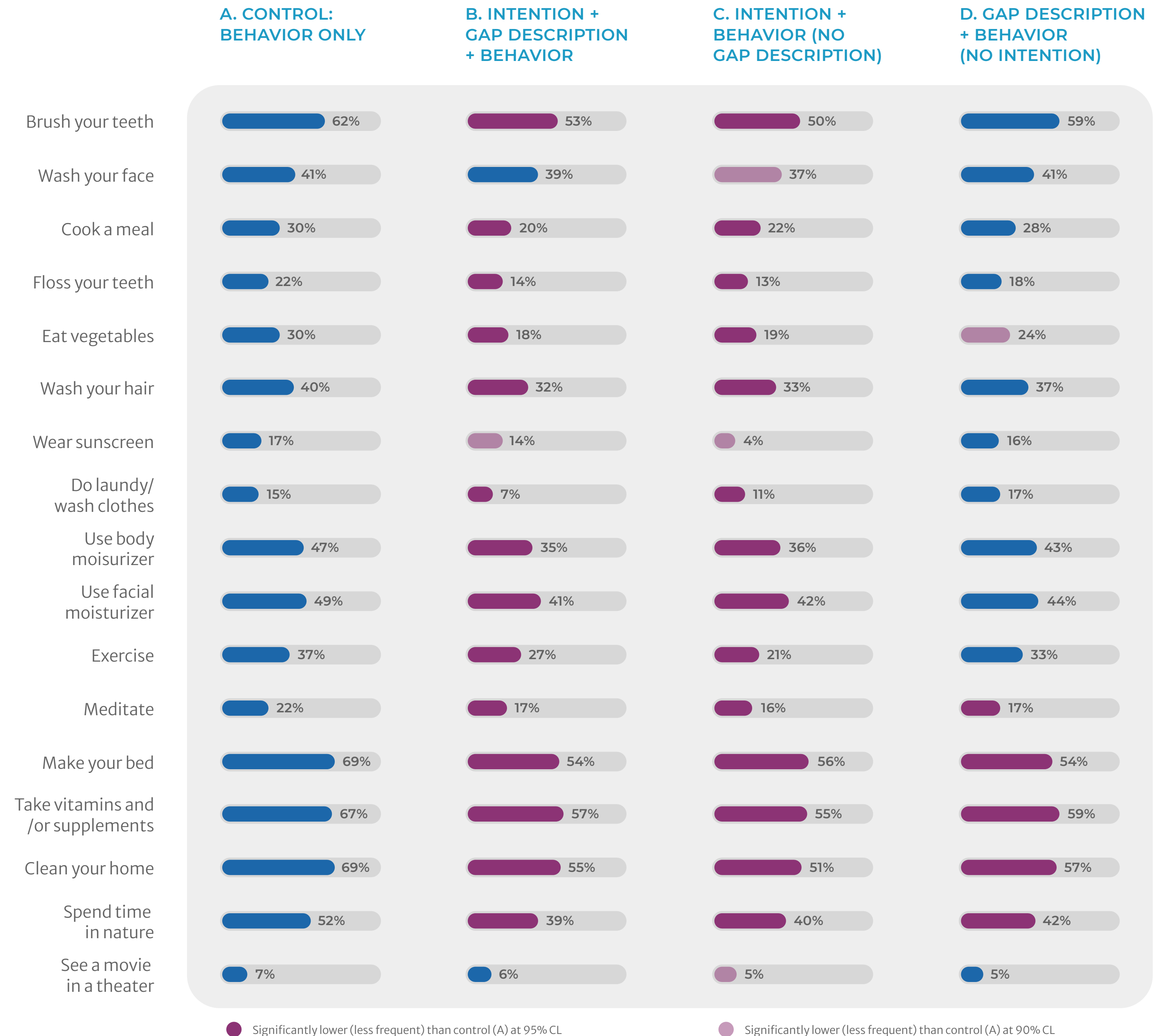
● Significant gap of 95% CL ● Significant gap of 90% CL

As expected, respondents *intended* to engage in behaviors more often than they actually engage in behaviors.

For example, 46% of respondents indicated that they intend to exercise most days of the week, but only 27% actually exercise most days of the week. Similarly, 68% of respondents intend to brush their teeth at least twice a day, but only 53% indicate that they actually brush their teeth that often. This pattern was seen across all behavioral domains tested, with 15 domains yielding a significant difference at the 95% confidence level and two domains (doing laundry, going to the movies) yielding a significant difference at the 90% confidence level.

Top 2 Box behavior frequency

After establishing the intention-behavior gap, we compared behavior frequency reporting in the control condition (Cell A) relative to each implementation of the experimental manipulation (Cells B, C, D). Across all domains, we compared behavior frequency using both 1-way ANOVA and z-tests on netted top 2 box scores. Results were near-identical across both analysis approaches; top 2 box nets are reported for ease of interpretation:





The winning setup

Relative to the control condition (Cell A), Cell C's set up yielded consistently less frequent behavior reporting across all domains. A similar, but less robust effect was seen in Cell B across all domains except face washing and seeing a movie in theater. In contrast, behavior frequency reporting in Cell D was statistically similar to control for most behaviors tested.

Taken together, these results suggest:

- Allowing respondents to report their *intended* behavior frequency prior to reporting their *actual* behavior frequency yields **more accurate behavior frequency reporting** (Cell C).
- Describing the intention-behavior gap is neither *necessary* (Cell B) nor *sufficient* (Cell D) to promote more accurate behavior frequency reporting.

Results indicate Cell C

	Control: Behavior only A.	Intention + gap description + behavior B.	Intention + behavior (no gap description) C.	Gap description + behavior (no intention) D.
Intention Expression	N/A	How often do you intend to...?	How often do you intend to...?	N/A
Gap Described	N/A	It can be hard to do things as often as we intend— because we’re short on time, must prioritize other things, or because we forget.	N/A	It can be hard to do things as often as we intend— because we’re short on time, must prioritize other things, or because we forget.
Behavior Expression	How often, on average, do you...?	Bearing that in mind, how often, on average, do you actually...?	How often, on average, do you actually...?	Bearing that in mind, how often, on average, do you actually...?

The power of measuring intentions

The results from this study suggest that by allowing survey-takers to first express how often they intend to engage in a normative or aspirational behavior, we can promote more accurate reporting of actual behavior frequency. This more accurate frequency data, in turn, will yield more accurate product usage estimates, as well as any other metrics that are estimated from frequency (e.g., market opportunity, spend potential).

Moreover, in this study, we successfully disentangled two constructs—intended behavior and actual behavior—that are often conflated in survey research. While it is important to note that we did not validate self-reported behavior frequency against actual behavioral frequency data (such as transactional records or sensor-based monitoring), we purposely selected behaviors for which over-reporting is well documented in the literature (e.g., exercise), as well as similar domains.

Beyond the immediate utility of more accurate claimed behavior reporting, measuring intentions and behaviors separately has intriguing implications for future research.

Looking into the implications of measuring intentions and behaviors separately, we'd like to understand:

- Do intentions and behaviors have unique predictive power for different types of outcomes? For instance, are intentions better predictors of initial product purchase, whereas behaviors are better predictors of long-term product usage and repurchase?
- What are the differences between large intention-behavior gap and small intention-behavior gap consumers? Are there lifestage, demographic, or psychographic differences? How can we test and explore features that address these different profiles? What are the barriers to closing the gap and what kinds of features, products, or services can brands offer to address the gap?
- Test the value of communications that prime and speak to our intentions—by making intentions more salient and central, can we increase the strength of the intention-behavior connection?
- And finally, we are interested to understand the role of intention for behaviors that are under-reported. Specifically, for behaviors that are considered negative, indulgent, or stigmatized, we often see under-reporting in surveys (e.g., drinking alcohol, eating sweet treats, watching TV, etc.). Can we engender more accurate reporting of these “less desirable” behaviors by allowing people to first tell us their intended (presumably less frequent) behavior?



About aytm

HOW CAN WE HELP?

Some see us as their go-to research connoisseur. Others see us as a self-serve insights buffet. But at aytm, we like to think of ourselves as a complex, multifaceted organism that thrives on curiosity and spits out understanding.

Our agile market research platform drives agile innovation for some of the largest consumer brands and agencies in the world. Researchers are empowered to conduct sophisticated research with a click of a button from a powerful but easy to use interface – cutting down the time to insights from days or weeks to hours. This researcher powered, iterative approach to actionable insights collection improves competitiveness, speed to market and revenue.

We can help you run a full range of quantitative research, collaborate on survey design in real-time and launch complex sophisticated research tests including max-diff, choice-based conjoint, automated TURF, pricing optimization and more in minutes. Our platform can enable you to gain access to over 100 million consumers via our integrated panel, which provides best-in-class levels of trust and quality, and real-time pricing with guaranteed delivery times. You can even tap into our flexible service options that unlock access to our team of research automation experts, when you need them (and not when you don't).

WHY NOT GET IN TOUCH?



Illuminating pathways for agile research

Frequency reporting is just one of the obstacles that many insights seekers are facing, so in order to help out where we can, we've developed a hub to light the way. Lighthouse is a beacon for knowledge—your resource center and guiding light throughout your agile journey.

What makes Lighthouse Academy so powerful? It's a free resource to maximize your research potential. Our learning platform allows you to:

- Easily search a growing catalog of self-paced courses, enjoy curated learning paths, and find the answers you need in the moment
- Learn from the experts on our Research Team and boost your confidence while taking the steps to become more agile
- Cultivate a learning record representing your expertise, bookmark your progress, and come back at any time

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