



IRRATIONALALLABS
IRRATIONALITY FOR GOOD

THIS **IS A BRIEF GUIDE TO** **DESIGNING EXPERIMENTS**

Designing Experiments 101





WARNING

Be sure to fill in all the blanks before proceeding to the next step.

Skipping this step will prevent you from getting the most out of this guide.

**Now with loss aversion in mind
let's proceed to the next step...**

IDENTIFY KEY BEHAVIOR

01

1

Identify Key Behavior

What is the **key behavior that you want your users to do?**

(eg. adopt negative keywords)

1

Identify Key Behavior

Key Behavior = Measured Variable

(what you will measure to see the effect of your test)

EXPERT TIP



Ask around, does everyone involved with your project agree that this is the most important behavior to measure?

IDENTIFY BEHAVIORAL BARRIERS

02

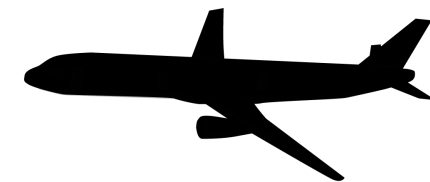
2

Identify Behavioral Barriers

Behavioral Barriers

any factor that decreases willingness to act on the key behavior

There are **2 types** of
behavioral barriers:



HEADWINDS

*factors that make
it difficult for a
user to engage in
the key behavior*

TAILWINDS

*factors that make
the key behavior
not sufficiently
motivating*

2

Identify Behavioral Barriers

What are the **barriers preventing people from doing the key behavior that you want them to do?**

*(list as many as you can think of, both **tailwinds** and **headwinds**)*

2

Identify Behavioral Barriers

HEADWIND



friction

takes too much time, complex sign up

TAILWIND



no perceived benefit

don't believe the benefit, there is no benefit, benefit is too far in the future

2

Identify Behavioral Barriers

EXPERT TIP



When thinking about tailwinds, think about enhancing current benefits and creating new ones

If you don't know behavioral barriers and benefits, check out our [workbooks](#)

CHOOSE A BARRIER

03

3

Choose A Barrier

Choose the behavioral barrier that you think **detracts most from people not exhibiting the key behavior, and explain it in the following format...**

3

Choose
A Barrier

**The reason people are not
currently partaking in**



**KEY
BEHAVIOR**

is because they



**BEHAVIORAL
BARRIER**

3

Choose A Barrier

**The reason people are not
currently partaking in**

overpaying on their loans

is because they

stick with the default minimum payment



**KEY
BEHAVIOR**



**BEHAVIORAL
BARRIER**

IDENTIFY BE PRINCIPLES

04

4

Identify BE Principles

EXPERT TIP



If you don't know *BE* principles,
check out our [workbooks](#)

4

Identify BE Principles

Using BE principles, what are some ways that you can **remove this barrier?**

(list as many as you can think of)

4

Identify BE Principles

B.E.
PRINCIPLE 

pre-commitment

put it on their calendar

B.E.
PRINCIPLE 

in-your-way instructions

have a pop-up at login

B.E.
PRINCIPLE 

urgency

provide a deadline

CHOOSE A PRINCIPLE

05

5

Choose A
Principle

Choose the behavioral economic principle that you think is **most likely to remove the barrier**

5

Choose A
Principle

**By using _____
we can increase the number
of people who**

 **B.E.
PRINCIPLE**

 **KEY
BEHAVIOR**

5

Choose A Principle

By using psychologically satisfying numbers
we can increase the number
of people who
overpay on their loans

 B.E.
PRINCIPLE

 KEY
BEHAVIOR

WRITE A HYPOTHESIS

06

6

Write A Hypothesis

If we do this...
then this will happen...
because...

6

Write A Hypothesis

If we add a prompt to round up loan repayments then people will be more likely to take action to overpay on their loans, because people prefer psychologically satisfying numbers.

CREATE TEST CONDITIONS

07

7

Create Test Conditions

Design your test below.
Start with **two conditions:**

CONTROL

TEST

What will each group of participants see?

Write out the exact text.

Will you use images?

If so, add the exact images.

7

Create Test Conditions

**Test Condition = Control Condition
+ One Key Variable you are testing**

Payment is \$1297.
Add \$3 to your
transaction

Pay off **8 months
earlier** and save an
average of **\$3,216!**

Add \$3

**CONTROL
CONDITION**

Payment is \$1297.
RoundUp to \$1300

Pay off **8 months
earlier** and save an
average of **\$3,216!**

RoundUp

**TEST
CONDITION**

7

Create Test Conditions

EXPERT TIP



Restrict to only **one** variable in the test condition.

Imagine you include **two** variables in the test condition (e.g., urgency and amount of incentive) and the test condition works twice as well as the control condition.

Why did it happen? YOU DON'T KNOW (it could have been urgency, OR the amount of the incentive, OR a combination of both)

7

Create Test Conditions

GURU TIPS *use at your own risk!

You can have more than two conditions:

STATUS QUO

CONTROL

TEST
CONDITION 1

TEST
CONDITION 2

The status quo is **never** the control.

You can have **more than one variable** between test conditions if they are testing the **same principle**.

If this is the last experiment you are ever running, then you have our permission to test different concepts and multiple key variables.



Quick Review

Do I have a **control condition**?

Do I have only **one key variable** between conditions?

Do participants understand the **key behavior** that I want them to do?

Do participants understand **how** to do the key behavior?

Are my instructions clear?

SELECT PARTICIPANTS

08

8

Select Participants

Let's do a quick Q&A...

8

Select Participants

Who will take part in your experiment?

All of your customers? Some of your customers?

Make sure participants are **representative of your entire customer base**. If you only test your most/least loyal customers, the results may not generalize to other customers.

8

Select Participants

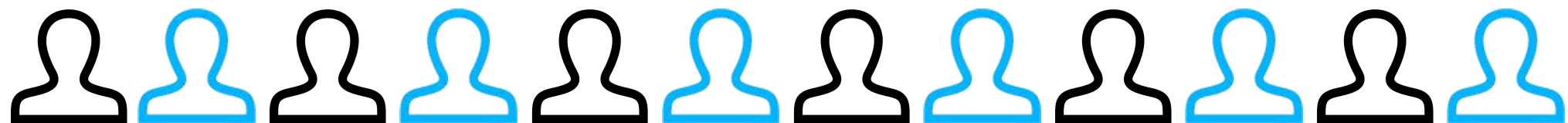
How will you decide which participant is in which condition?

Participants should be **randomly assigned**. There should not be a special reason why someone is in your control or test condition.

8

Select Participants

12 Participants



 = Control Condition (6)

 = Test Condition (6)

EXPERT TIP



Use spreadsheets to randomize your participants. Create as many random numbers as you have participants. Then assign each participant a number and list the participants in ascending or descending order.

8

Select Participants

How many participants will take part in your experiment?

Think about the **number** of people who are going to do the key behavior.

Think about what **relevant funnels** might **shrink** your sample size.

You should target **250+ per condition**.

IMPRESSIONS > CLICKS >  = 

8

Select Participants

How many participants in each condition?

Each condition should have the **same number** of participants.

REFLECT

09

Take some time to **reflect** on your experiment (before & after)

BEFORE

What do you expect will happen? Write down your predictions and try to plot the data. Make sure you know how to analyze the data.

Do you believe this experiment will prove your hypothesis?

AFTER

Plot your data. Compare results to your prediction.

Did the experiment support your hypothesis?

Do you need further experimentation?

Final Review



POP QUIZ!

Q1

What's wrong with this experiment?

I want to increase fitness activity among my employees.
I predict that giving people 20% off their gym membership will get them to be more active. I create the conditions below.
Half of my employees are randomly assigned to each condition.
I measure how many of them sign up for the gym membership.

CONTROL

Start being active today! Sign up for the Hard Body Gym today!

TEST

Start being active today! Sign up for the Hard Body Gym today and get 20% off your membership

Q1

What's wrong with this experiment?

Measuring the wrong key behavior

Gym membership \neq increased fitness activity

CONTROL

Start being active today! Sign up for the Hard Body Gym today!

TEST

Start being active today! Sign up for the Hard Body Gym today and get 20% off your membership

Q2

What's wrong with this experiment?

I'm curious to see which plea will get people to donate more money. I create the two conditions below. I randomize my 4,000 participants, and send 2,000 one version and the other 2,000 the other version. I measure the number of people who donate, and how much they donate.

CONTROL

Donate today and
get a tax write off

TEST

Donate today and
save a life



Q2

What's wrong with this experiment?

More than one key variable

“Save a life” + Picture

CONTROL

*Donate today and
get a tax write off*

TEST

*Donate today and
save a life*



Q3

What's wrong with this experiment?

I run an enterprise software company, and want to see which type of pricing will get more companies to sign up for my product. I predict that having 3 options instead of just 2 will increase my revenue. I send one version to my customers in Burlington, VT and the other to my customers in Los Angeles, CA.

CONTROL	TEST
Base Package: \$200 Premium Package: \$350	Base Package: \$200 Premium Package: \$350 Premium Plus Package: \$400

Q3

What's wrong with this experiment?

Conditions \neq randomly assigned

Customers in different areas may have different preferences

CONTROL	TEST
Base Package: \$200 Premium Package: \$350	Base Package: \$200 Premium Package: \$350 Premium Plus Package: \$400

Q4

What's wrong with this experiment?

I run a financial management company and want to see if people sign up more when they know how much time it will actually take them to sign up. Here are my conditions:

CONTROL

Without rebalancing quarterly, you may be missing out on potential money

TEST

Get more money from rebalancing in just 15 minutes each quarter

Q4

What's wrong with this experiment?

More than one key variable

“Get more money” + “15 minutes”

CONTROL

Without rebalancing quarterly, you may be missing out on potential money

TEST

Get more money from rebalancing in just 15 minutes each quarter

Congratulations!

*You have passed
designing experiments 101*

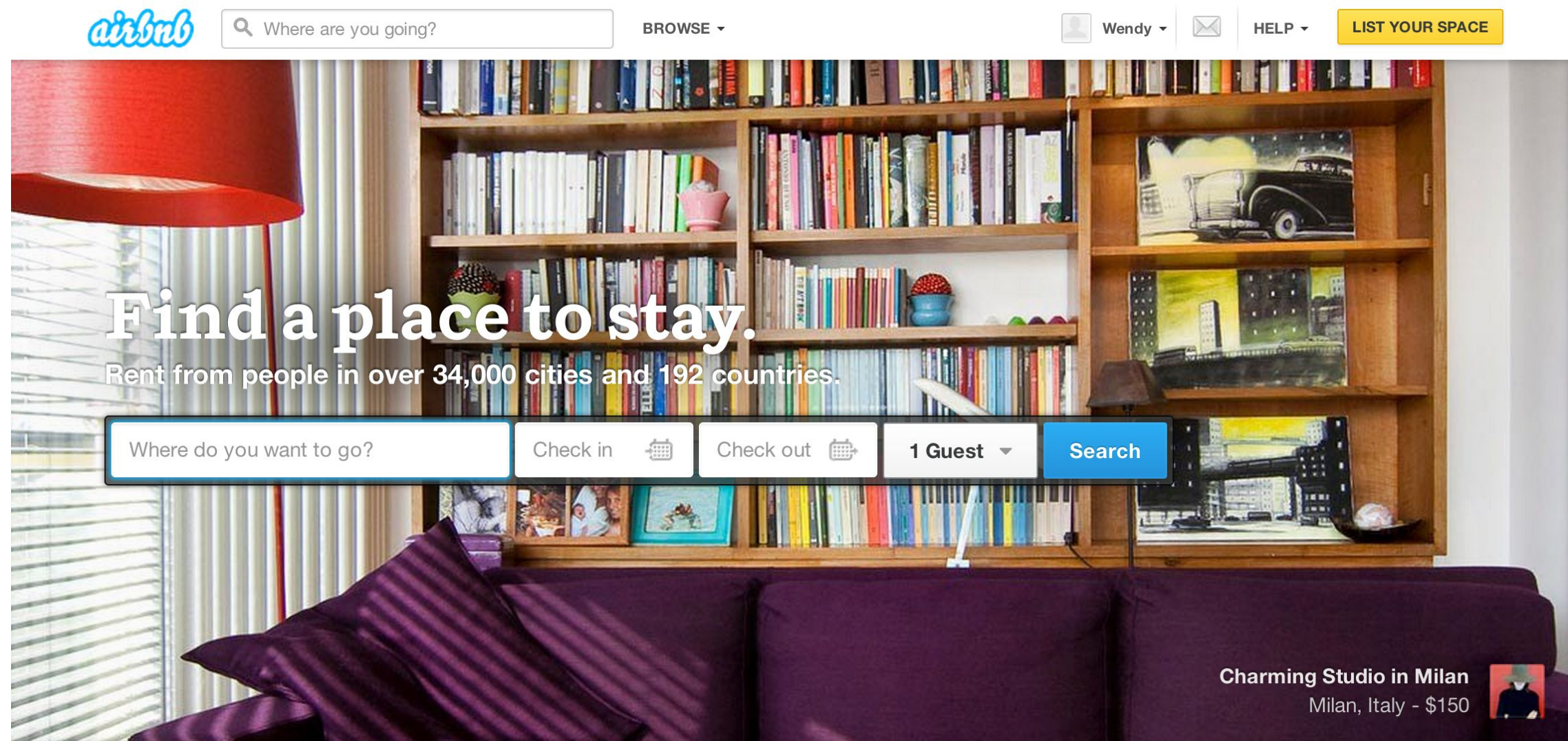
To become an expert contact:



IRRATIONALLABS
IRRATIONALITY FOR GOOD

GURU QUESTIONS

We notice Airbnb guests really value a **quiet environment**. How do we get hosts to **decrease noisiness**?



Let's follow the steps



1

Identify Key Behavior

What is the **key behavior that you want your users to do?**



**KEY
BEHAVIOR**

1

Identify Key Behavior

What is the **key behavior that you want your users to do?**

Decrease noisiness



**KEY
BEHAVIOR**

2

Identify Behavioral Barriers

What are the **barriers preventing people from doing the key behavior that you want them to do?**

(list as many as you can think of, both tailwinds and headwinds)

2

Identify Behavioral Barriers

BEHAVIORAL
BARRIERS 

don't want to be quiet

are not actively thinking about it

no incentive to be quiet

3

Choose
A Barrier

**The reason people are not
currently partaking in**

 **KEY
BEHAVIOR**

is because they

 **BEHAVIORAL
BARRIER**

3

Choose A Barrier

**The reason people are not
currently partaking in
decreased noisiness**

 **KEY
BEHAVIOR**

**is because they
have no incentive to be quiet**

 **BEHAVIORAL
BARRIER**

4

Identify BE Principles

Using BE principles, what are some ways that you can **remove this barrier?**

(list as many as you can think of)

4

Identify BE Principles

B.E.
PRINCIPLE



concreteness

email reminders explaining the importance of providing a quiet environment

B.E.
PRINCIPLE



incentives

providing star rating on noisiness

5

Choose A
Principle

Choose the behavioral economic principle that you think is **most likely to remove the barrier**

5

Choose A Principle

 B.E. PRINCIPLES

**By using _____ we can
increase the number of hosts
who _____**

 KEY BEHAVIOR

5

Choose A Principle

 B.E. PRINCIPLES

By using incentives we can
increase the number of hosts
who decrease noisiness

 KEY BEHAVIOR

6

Write A Hypothesis

If we do this...
then this will happen...
because...

6

Write A Hypothesis

**If we add incentives,
then hosts will be more likely to
take action to decrease noisiness,
because incentives nudge people
to complete an action in order to
get the incentive.**

7

Create Test Conditions

Design your test below

CONTROL

**TEST
CONDITION 1**

**TEST
CONDITION 2**

7

Create
Test
Conditions

Control - rate noise level

Reviews (51)

Other Property Reviews (37)

Friends (1)

Overall Guest Satisfaction

★★★★★

Accuracy

★★★★★

Cleanliness

★★★★★

Check In

★★★★★

Communication

★★★★★

Location

★★★★★

Value

★★★★★

Noise level

★★★★★

Provide a quiet environment!

Airbnb

Provide a quiet environment!

Hosts,

We have learned that our clients really value a quiet environment. Thus, we are creating a new rating on "Noise Level", where 5 stars is a quiet environment and 1 star is a very loud environment.

Thanks for helping us provide the best experience possible!

-Airbnb |

7

Create
Test
Conditions**Condition 1 - rate noise level +
gift incentive (mug)**

Reviews (51)

Other Property Reviews (37)

Friends (1)

Overall Guest Satisfaction

★★★★★

Accuracy

★★★★★

Cleanliness

★★★★★

Check In

★★★★★

Communication

★★★★★

Location

★★★★★

Value

★★★★★

Noise level

★★★★★

Provide a quiet environment and receive an Airbnb mug!

Airbnb

Provide a quiet environment and receive an Airbnb mug!

Hosts,

We have learned that our clients really value a quiet environment. Thus, we are creating a new rating on "Noise Level", where 5 stars is a quiet environment and 1 star is a very loud environment.

Get a 5 star rating on Noise Level and receive an Airbnb mug!

Thanks for helping us provide the best experience possible!

-Airbnb

7

Create
Test
Conditions**Condition 2 - rate noise level + financial incentive (\$10)**

Reviews (51)

Other Property Reviews (37)

Friends (1)

Overall Guest Satisfaction

★★★★★

Accuracy

★★★★★

Cleanliness

★★★★★

Check In

★★★★★

Communication

★★★★★

Location

★★★★★

Value

★★★★★

Noise level

★★★★★

Provide a quiet environment and receive \$10!

Airbnb

Provide a quiet environment and receive \$10!

Hosts,

We have learned that our clients really value a quiet environment. Thus, we are creating a new rating on "Noise Level", where 5 stars is a quiet environment and 1 star is a very loud environment.

Get a 5 star rating on Noise Level and receive \$10!

Thanks for helping us provide the best experience possible!

-Airbnb

7

Create Test Conditions

What is wrong with these conditions?

8

Select Participants

 **Select 1,200 randomly
generated hosts in the US**

 **400 hosts per condition**

Take some time to **reflect** on your experiment (before & after)

BEFORE

What do you expect will happen? Write down your predictions and try to plot the data. Make sure you know how to analyze the data.

Do you believe this experiment will prove your hypothesis?

AFTER

Plot your data. Compare results to your prediction.

Did the experiment support your hypothesis?

Do you need further experimentation?