

WEXTOR 2022 Tutorial

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| | |
|---|----|
| WEXTOR at a Glance | 2 |
| Tutorials & Help | 2 |
| Login | 4 |
| Experimental Designs | 6 |
| Create an Experimental Design | 6 |
| Example: 1x2 Factorial Experiment | 6 |
| Example: 2x2 Factorial Experiment | 21 |
| My Experimental Designs | 25 |
| Hosting | 26 |
| Upload an Experiment | 26 |
| My Uploaded Experiments | 27 |
| Features | 28 |
| Frequently Asked Questions | 29 |
| Data Collection - How does WEXTOR collect data? | 29 |
| Log File - Which information should the log file contain? | 29 |
| GET Method - Which method is used to send data to the Web server? | 29 |

WEXTOR at a Glance

WEXTOR is a Web-based tool that can be used to design laboratory and Web experiments in a guided step-by-step process. It dynamically creates the customized Web pages and Javascripts needed for the experimental procedure and provides experimenters with a print-ready visual display of their experimental design. WEXTOR flexibly supports complete and incomplete factorial designs with between-subjects, within-subjects, and quasi-experimental factors, as well as mixed designs. It implements client-side response time measurement and includes a content wizard for creating interactive materials, as well as dependent measures (graphical scales, multiple-choice items, etc.) on the experiment pages.

WEXTOR 2022 is useful to students who are familiar with basic Internet techniques and want to learn about experimenting. It is also useful to experienced experimenters who know about experimental design and want to learn about specifics of Web-based experimenting. And also it can be used by experienced Web experimenters who need a fast tool to create experimental designs and procedures

This tutorial focuses on WEXTOR 2022, which is the newest version of WEXTOR. However, if you prefer to work with a previous version (WEXTOR has existed since 2000), you can find it by following these links:

WEXTOR 3.2 is at <https://legacy.wextor.eu/wextor/en/>

WEXTOR 1.3 is at <http://wextor.eu/legacy/1.3b13/>

WEXTOR 1.1 is at <http://wextor.eu/legacy/1.1b3e/>

Tutorials & Help

This tutorial is helpful for people who are new to WEXTOR 2022 and want to get a good overview of it. In here you can find a detailed description of how to create an experimental design and an example featuring screenshots (a new version of the “cup” experiment). Also it is explained how you can log in, upload experimental designs, what new features WEXTOR 2022 has and how you can get help if you still have questions after this tutorial.

You can find helpful tricks in [this document](#) and for more information also read [this article](#) about standards for Internet-based experimenting.

Further information about WEXTOR can be found in an (admittedly somewhat outdated) publication by [Reips and Neuhaus \(2002\)](#).

You can also subscribe to our [WEXTOR e-group](#) to receive information about new releases. The WEXTOR e-group is also an excellent source for tips and tricks as well as a forum for discussion and help.

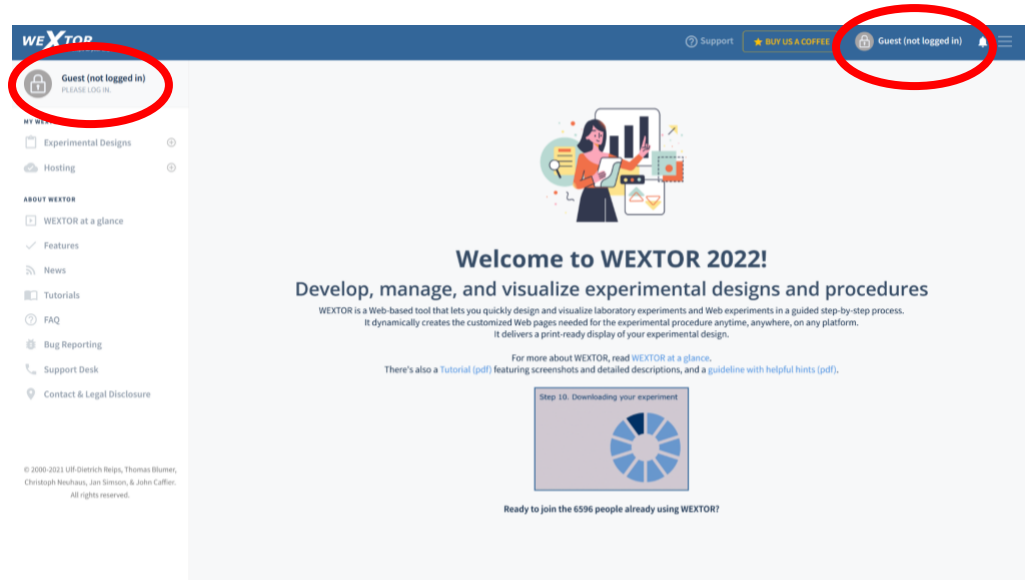
If there are any features that you would like to have added to WEXTOR, you can contact us over the WEXTOR feature request page (go to “Contact & Legal Disclosure” and then click on “Feature Request form”).

If you find any bugs in WEXTOR, please go to “Bug Reporting” and fill in the form. We will not be able to individually respond to every bug reporting message, we do, however, read each and every message. Your bug reporting for improvements is very important to us.

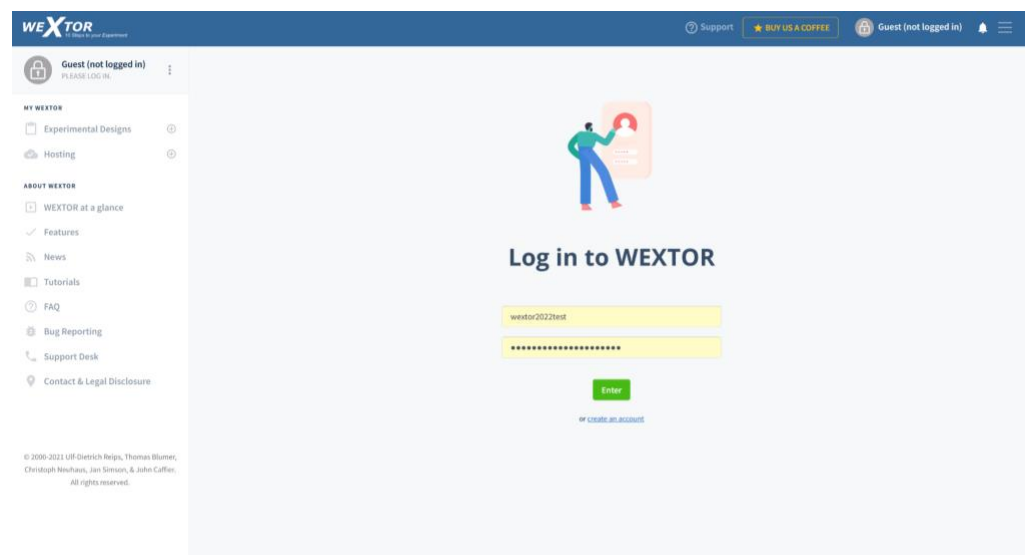
If there are still remaining questions, please contact us by e-mail over wextor@deusto.es

Login

To log in on WEXTOR go to <https://wextor.eu> and click on „Guest (not logged in)“.



You will then come to a page, where you can login if you already have an account or click on “create an account” if you do not have an account yet.



Here you are asked to fill in a short form. You will then receive an e-mail with an activation code. You will need to enter that code only during your very first login, afterwards your login and password will suffice.

WEXTOR
BY DEUSTO

Support BUY US A COFFEE Guest (not logged in)

Guest (not logged in)
PLEASE LOGIN

MY WEXTOR

- Experimental Designs
- Hosting

ABOUT WEXTOR

- WEXTOR at a glance
- Features
- News
- Tutorials
- FAQ
- Bug Reporting
- Support Desk
- Contact & Legal Disclosure

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Register now

Thank you for your interest in WEXTOR. To obtain a WEXTOR trial account, please fill out the following information. Your login can consist of letters (A-Z), numbers (0-9), and underscores (_) only. You will use your WEXTOR login and password to access and modify your personal account. Your e-mail address is required to get the activation code for your account.

Username
Password
Password Confirmation
E-Mail

Pool participation: ☐
I accept the [Terms of Use](#): ☐

Register

[log in using an existing account](#)

It is for free to create a WEXTOR account and use most features of it. But there are some features that you only have if you get a paid account on WEXTOR. There are 4 reasons to get such a paid account:

1. Downloading of data in 'each-participant-a-line-each-variable-a-column' format from an experiment hosted by us (more work!) is available in paid account mode only.
2. Trial accounts will stop working after 6 months — by paying you can reactivate your experiments.
3. The data file contains a variable that lets you see a participant's path through your experiment (e.g. use of the back button).
4. You support our work. A license is €40 for a single account. Other licenses are available. Please contact wextor@deusto.es for details.

Experimental Designs

If you click on “Experimental Designs” you can choose to create a new experimental design or to view the experimental designs that you have already created.

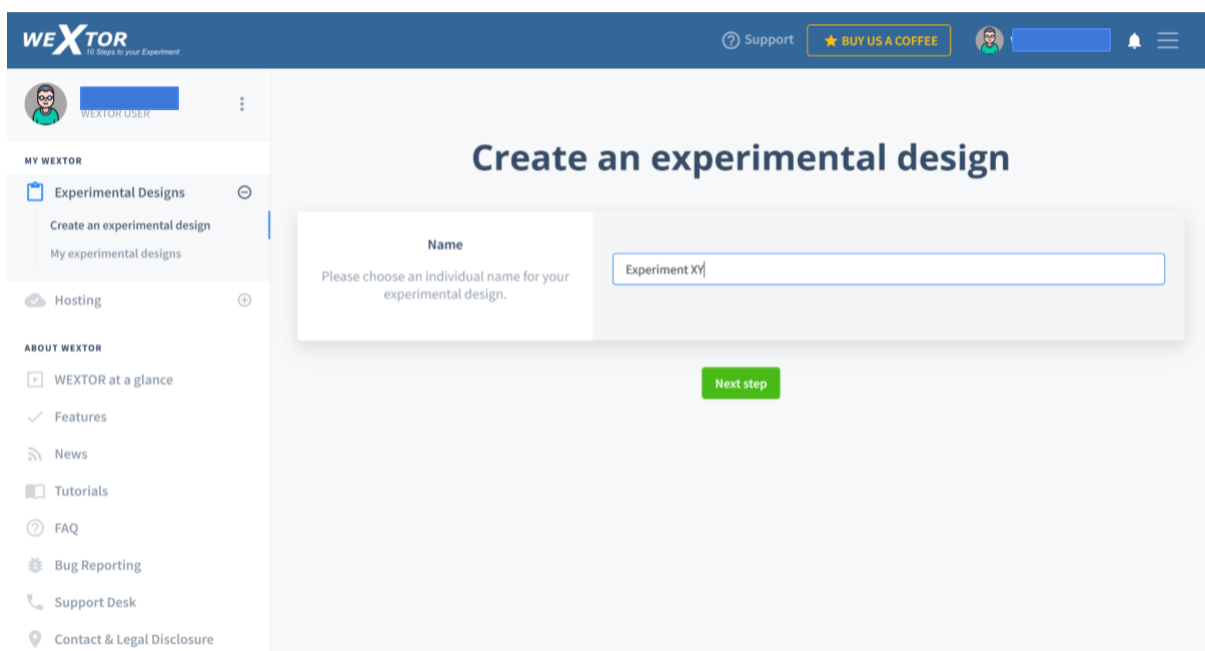
Create an Experimental Design

To demonstrate how you can create an experimental design on WEXTOR, we will now create a simple one factorial experiment with two levels on that factor, called “the cup experiment”. We will later expand the experiment to a 2x2 factorial experiment. (Note that WEXTOR can also be used to create surveys by simply ignoring the factorial variations.) The experiment is based on McKenzie and Nelson (2003), who investigated “information leakage” as an explanation for framing effects (for example, psychological results of describing the effects of a disease as “200 out of 600 infected people survived” rather than “400 out of 600 infected people died”). See [Reips, 2003](#) for an early replication using Internet research tools, including WEXTOR.

The cup experiment is also available for WEXTOR 3.2. You can find a tutorial to create it in that version [here](#).

Example: 1x2 Factorial Experiment

On the first screen after logging in click on “Experimental Designs” and then on “Create an Experimental Design”. Then type in a name for your experiment, for example “cup”, and click on the green button “Next step”.



The screenshot shows the WEXTOR web application interface. The top navigation bar includes the WEXTOR logo, a support link, a 'BUY US A COFFEE' button, and user profile information. The left sidebar contains a menu with 'MY WEXTOR' (Experimental Designs, Create an experimental design, My experimental designs), 'Hosting', and 'ABOUT WEXTOR' (WEXTOR at a glance, Features, News, Tutorials, FAQ, Bug Reporting, Support Desk, Contact & Legal Disclosure). The main content area is titled 'Create an experimental design' and features a form with a 'Name' label and a text input field containing 'Experiment XY'. Below the input field is a green 'Next step' button.

Step 1: In Step 1 you are asked to specify how many between-subjects and within-subjects factors there are and whether there are quasi-experimental factors in your experiment. In our case we will need one between-subjects factor. As a reminder, the following types of designs are possible in experimenting, and mixtures thereof.

- Between-subject design: an experimental design in which you expose each participant to only one level of your independent variable (or variables).
- Within-subject design: an experimental design in which you expose each participant to all levels of your independent variable (or variables).
- Quasi-experimental design: an experimental design in which experimental conditions depend on participants' attributes on quasi-experimental (natural) factors, e.g. 'female' on sex. WEXTOR allows you to send participants to different Web pages, depending on their answers.

WEXTOR Step 1: Defining factors

You may choose to manipulate several independent variables. There are three basic ways to assign participants to the levels of your independent variable. You can expose each participant to only one level of the independent variable (or variables). This method is called between-subjects design. Or you can expose each participant to all levels of the independent variable (or variables). This method is called within-subjects design. Or you can expose each participant to only one level of the independent variable depending on participants' answer to a question (e.g. sex).

At this stage, please think of your experimental design as a complete design. Don't worry for now, if the experimental design you have in mind is incomplete. You will be able to create the superfluous experimental conditions in Step 6. Additional procedures for quasi-experimental (natural) factors may be defined in Step 8.

NOTE: For display reasons, an experimental design created by WEXTOR is limited to 1 to 5 between-subjects factors and 1 to 5 within-subjects factors. For experimental designs with a maximum of six levels of one within-subjects factor, WEXTOR lets you choose which sequences should be displayed. For each participant, one of these will be randomly chosen. For seven or more levels of one within-subjects factor, you can choose to display the pages in random order. If your design consists of more than one within-subjects factor, pages will always be displayed in the order given by the order of levels and pages within levels. An experimental design created by WEXTOR seemingly includes only one quasi-experimental (natural) factor at most. However, you may include more than one quasi-experimental factor through direct naming of level combinations (e.g., "female & age 20-40").

Between-subjects factors
How many between-subjects does your experimental design consist of?

Within-subjects factors
How many within-subjects design does your experimental design consist of? **NOTE:** Currently, it is best to define only one within factor. If you have multiple within factors in your design, then please redefine their combinations of levels as levels of one within factor, e.g. color (red, blue) and font size (10, 12) of Web pages as appearance (red 10, red 12, blue 10, blue 12).

Quasi-experimental factors
Does your experiment include at least one quasi-experimental factor?

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Step 2: In Step 2 you can see how many factors your experiment has. You are asked to name all factors and indicate the number of levels for each factor.

In this example, we name our one factor "reference point" and enter "2" as the number of levels.

WEXTOR 10 Steps to your Experiment

Support BUY US A COFFEE v [user profile] [notifications] [menu]

WEXTOR USER

MY WEXTOR

- Experimental Designs
- Hosting

ABOUT WEXTOR

- WEXTOR at a glance
- Features
- News
- Tutorials
- FAQ
- Bug Reporting
- Support Desk
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Step 2 Defining factors

Your experiment consists of 1 factors. Please name all factors and indicate the number of levels for each factor.

| Between-subjects factors | NAME | NUMBER OF LEVELS |
|--|-----------------|------------------|
| Please name your between-subjects factors and indicate the number of levels for each factor. | reference point | 2 |

Back Next

Step 3: In Step 3 you can name the levels of the factors you defined in Step 2. In this example we name them “4→2” and “0→2”.

WEXTOR 10 Steps to your Experiment

Support BUY US A COFFEE v [user profile] [notifications] [menu]

WEXTOR USER

MY WEXTOR

- Experimental Designs
- Hosting

ABOUT WEXTOR

- WEXTOR at a glance
- Features
- News
- Tutorials
- FAQ
- Bug Reporting
- Support Desk
- Contact & Legal Disclosure

Step 3 Defining levels

Please name the levels of the factors you defined in Step 2.

| Between-subjects factors | Factor 'reference point' |
|--|--------------------------|
| Please name the levels of your between-subjects factors. | NAME 4→2 |
| | NAME 0→2 |

Back Next

Step 4: In Step 4 you can name your experimental conditions. WEXTOR already made a naming proposal, which consists of the abbreviated form for the experimental condition and four random characters. Please note that it is wise to NOT use names that reveal information about the underlying structure of your Web experiment, because participants may react differently in a condition named “control” or “placebo” rather than in a condition named “treatment”.

If your experimental design is incomplete, you may now erase the superfluous experimental conditions. Simply uncheck all experimental conditions you don't need.

In this example we leave both boxes checked.

The screenshot shows the WEXTOR web interface for Step 4: Defining experimental conditions. The interface has a dark blue header with the WEXTOR logo, a support link, a 'BUY US A COFFEE' button, and a user profile. A left sidebar contains navigation links for 'MY WEXTOR' (Experimental Designs, Hosting) and 'ABOUT WEXTOR' (WEXTOR at a glance, Features, News, Tutorials, FAQ, Bug Reporting, Support Desk, Contact & Legal Disclosure). The main content area is titled 'Step 4 Defining experimental conditions'. It features a text box for naming experimental conditions, a list of conditions with checkboxes, and a 'Next' button.

Step 4
Defining experimental conditions

Experimental conditions

Please name your experimental conditions. We already made a naming proposal, which consists of the abbreviated form for the experimental condition and four random characters. Please note that it is wise to NOT use names that reveal information about the underlying structure of your Web experiment.

If your experimental design is incomplete, you may now erase the superfluous experimental conditions. Simply uncheck all experimental conditions you don't need.

☒ Experimental condition 1:
1b36d

☒ Experimental condition 2:
264a1

[Back](#) [Next](#)

Step 5: In Step 5 you can define how many pages each level (block) consists of, respectively how many pages you need in total. Also think of including some general instruction pages.

If you are intending to conduct this experiment on the World Wide Web, consider using the *warm-up technique* for drop-out control. It means running similar tasks as the experimental task(s) Before actually introducing the experimental manipulation. Thus, dropout before that point cannot be attributed to the manipulation (Reips, 2002). Please note that the number of Web pages has to be the same in every experimental condition - otherwise we would introduce a confounding variable.

WEXTOR automatically generates five Web pages: (Do not include the 5 default pages with the number of pages you fill in.)

- *index* page: this is the homepage of your experiment.
- *start* page: we need to test whether a participant's Web browser is JavaScript compatible. If the test result is positive then the user will be redirected to the start page automatically. This page should contain general information about your Web

experiment. If your instruction requires a participant consent form, then this page would be the place for it.

- *source* page: If the user doesn't have a JavaScript capable Web browser, he will be sent to the source page. This page should display the information that the user won't be able to participate in this experiment because the Web browser isn't JavaScript capable. Further you can tell the user where to get a qualifying Web browser or how to enable JavaScript in the browser preferences.
- *demos* page: this is the place to ask the user for demographical information.
- *thank* page: this is the place to thank participants for their participation.

In this example we only need 1 Web page.

WEXTOR Web Experiment Tool

Support BUY US A COFFEE

Step 5
Defining Web pages

Web Pages

How many pages does one experimental condition consist of? If you are intending to conduct this experiment on the World Wide Web, consider using the warm-up technique for drop-out control. Please note that the number of Web pages has to be the same in every experimental condition - otherwise we would introduce a confounding variable.

Number of Web pages:

WEXTOR automatically generates five Web pages:

- index page: this is the homepage of your experiment.
- start page: we need to test whether a participant's Web browser is JavaScript compatible. If the test result is positive then the user will be redirected to the start page automatically. This page should contain general information about your Web experiment. If your instruction requires a participant consent form, then this page would be the place for it.
- source page: If the user doesn't have a JavaScript capable Web browser, he will be sent to the source page. This page should display the information that the user won't be able to participate in this experiment because the Web browser isn't JavaScript capable. Further you can tell the user where to get a qualifying Web browser or how to enable JavaScript in the browser preferences.
- demos page: this is the place to ask the user for demographical information.
- thank page: this is the place to thank participants for their participation.

NOTE: Do not include the 5 default pages with the number of pages you fill in.

Back Next

Step 6: You are now asked to name your Web pages (e.g., task.html):

WEXTOR 10 Steps to your Experiment

Support BUY US A COFFEE wextor2022test

Step 6
Defining Web pages

Web Page Names
Please name your Web pages now (e.g., Intro.html).

Name of index page: index .html
Name of start page: start .html
Name of source page: source .html
Name of demos page: demos .html
Name of thank page: thank .html

Choosing obvious file names is a frequent error when creating and designing Web experiments. For this reason WEXTOR offers to add some random characters at the end of your file names. Simply click on the button 'add'. You will see the changes immediately in your file names:

add

Name Page #1: task .html

Time-out in seconds (0: the page will not time-out) 0

Back Next

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Step 7: Our experimental design does not include a within-subjects factor, so we can skip this step.

WEXTOR 10 Steps to your Experiment

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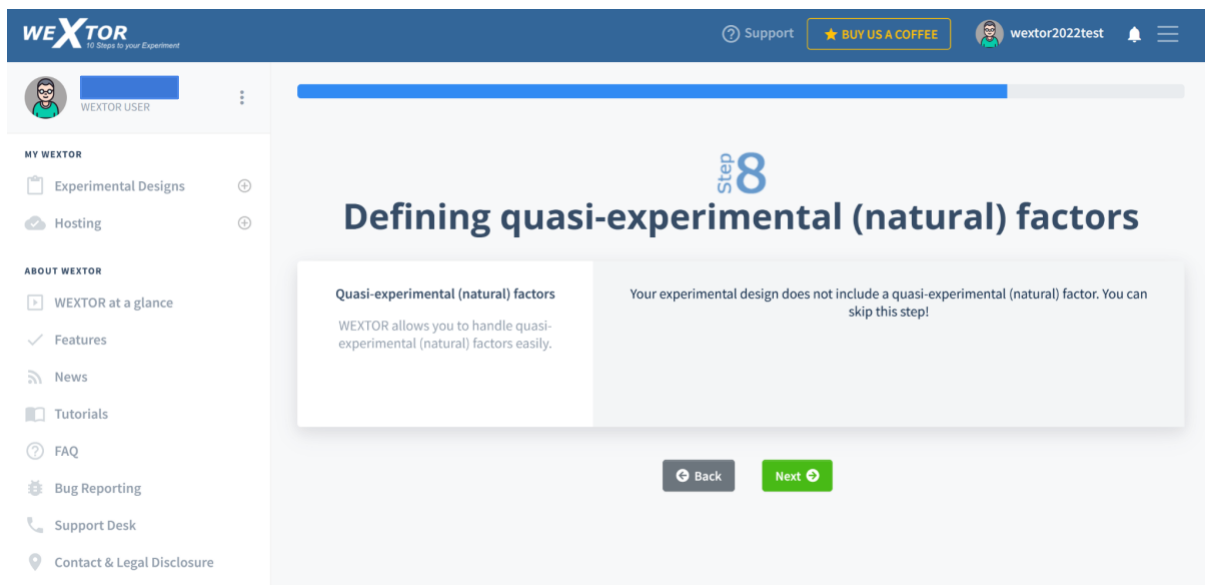
Step 7
Defining the sequence of within-subjects factor levels

Counterbalancing
To minimize sequence effects, you can counterbalance.

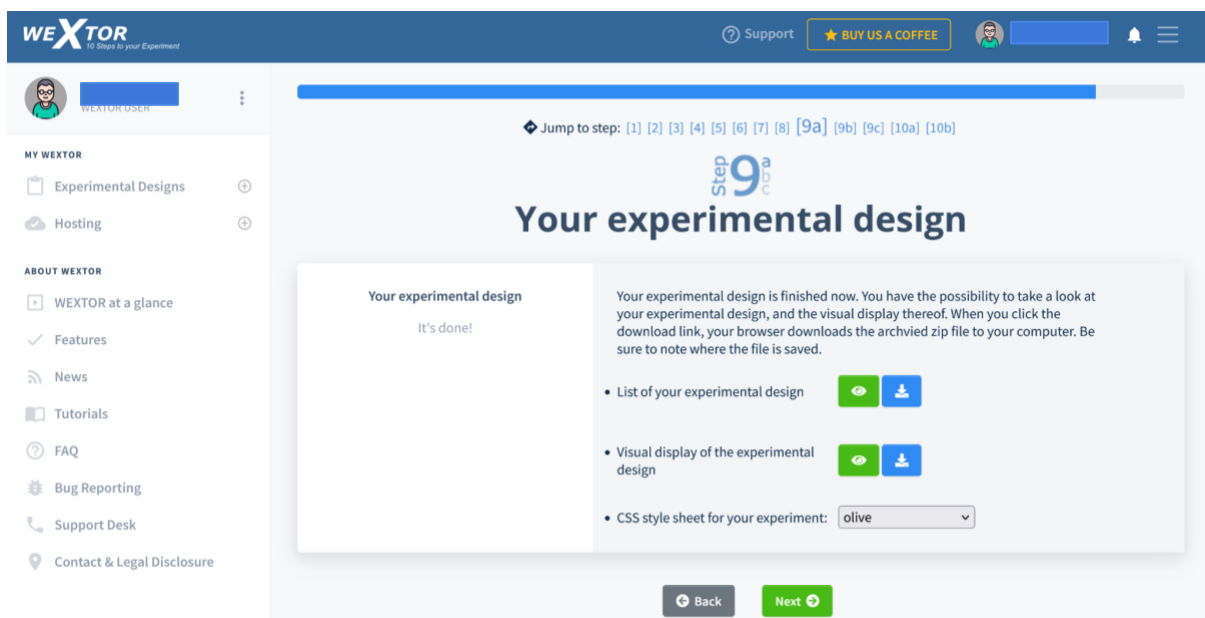
Your experimental design does not include a within-subjects factor. You can skip this step!

Back Next

Step 8: Our experimental design does not include a quasi-experimental (natural) factor, so we can skip this step.



Step 9a: Our experimental design is finished now. You have the possibility to view or download it.



If you view the “List of your experimental design”, you will see the following structured view of your factors with levels, the resulting experimental conditions, and your code plan (now it is still empty but will show details after you add measures in Step 9b).

WEXTOR Your experimental design

Your experiment consists of 1 factors:

Between-subjects factors

Factor 'reference point'

- 4→2
- 0→2

Experimental conditions

Experimental condition 1: 1b36d
 • factor reference point, level 4→2

Experimental condition 2: 264a1
 • factor reference point, level 0→2

Code plan for 'Experiment_XY'

General information

| | |
|---|-------------|
| Number of within factors: | 0 |
| Number of between factors: | 1 |
| Number of quad experimental factors: | 0 |
| Number of pages (not predefined): | 1 |
| Name of the index page: | index.html |
| Name of the source page: | source.html |
| Name of the start page: | start.html |
| Name of the demo page: | demos.html |
| Name of the thank you page: | thank.html |
| Delay until start.html is shown: | 0 seconds |
| Delay until demos.html is shown: | 0 seconds |
| Delay until the first page after demos.html is shown: | 0 seconds |

Variables and answer options

Page task.html:

condition 1 (1b36d):

| Item name | Type | Text | Description | Options |
|----------------------|------|------|-------------|---------|
| condition 2 (264a1): | | | | |
| | | | | |

Buttons: Start, Next

Clicking on “Visual display of your experimental design” in Step 9a will provide you with the following display that shows a flow chart or procedure for your experiment. A participant will move from top to bottom through the Web pages that are shown.

WEXTOR Visual display of your experimental design

Flow chart showing the sequence of web pages:

```

graph TD
    index.html --> start.html
    start.html --> choice
    choice --> 1b36d
    choice --> 264a1
    1b36d --> demos.html
    264a1 --> demos.html
    demos.html --> task.html
    task.html --> thank.html
  
```

Buttons: Back, Next

Clicking on a folder name will open a pop-up window explaining the corresponding experimental condition:



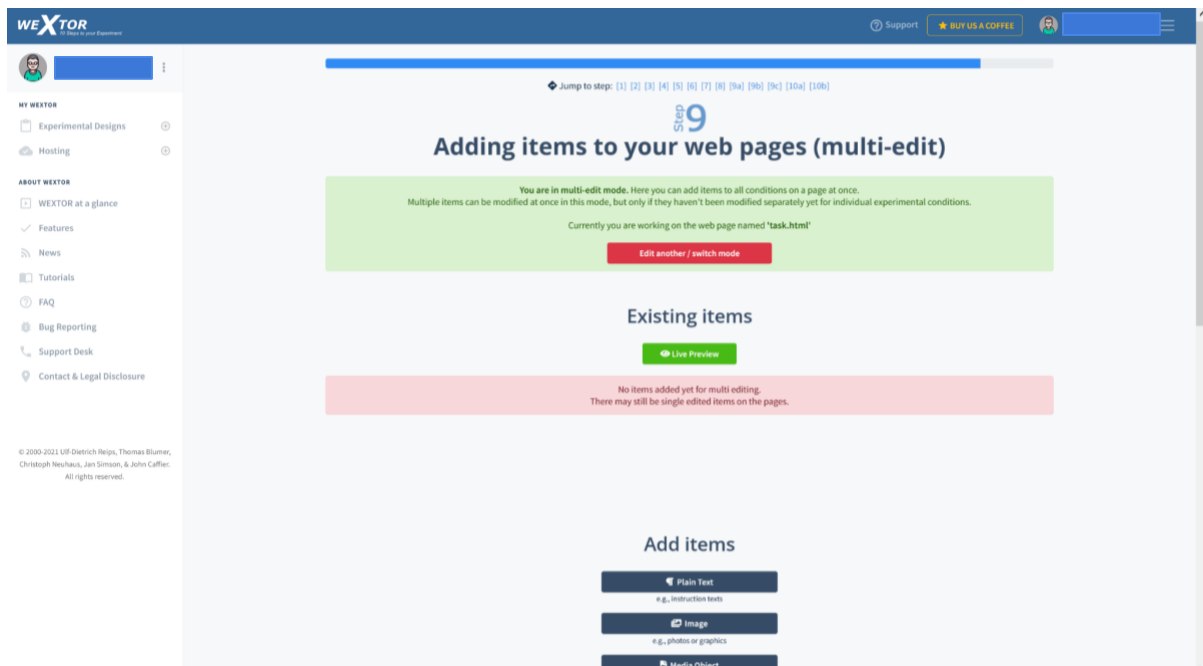
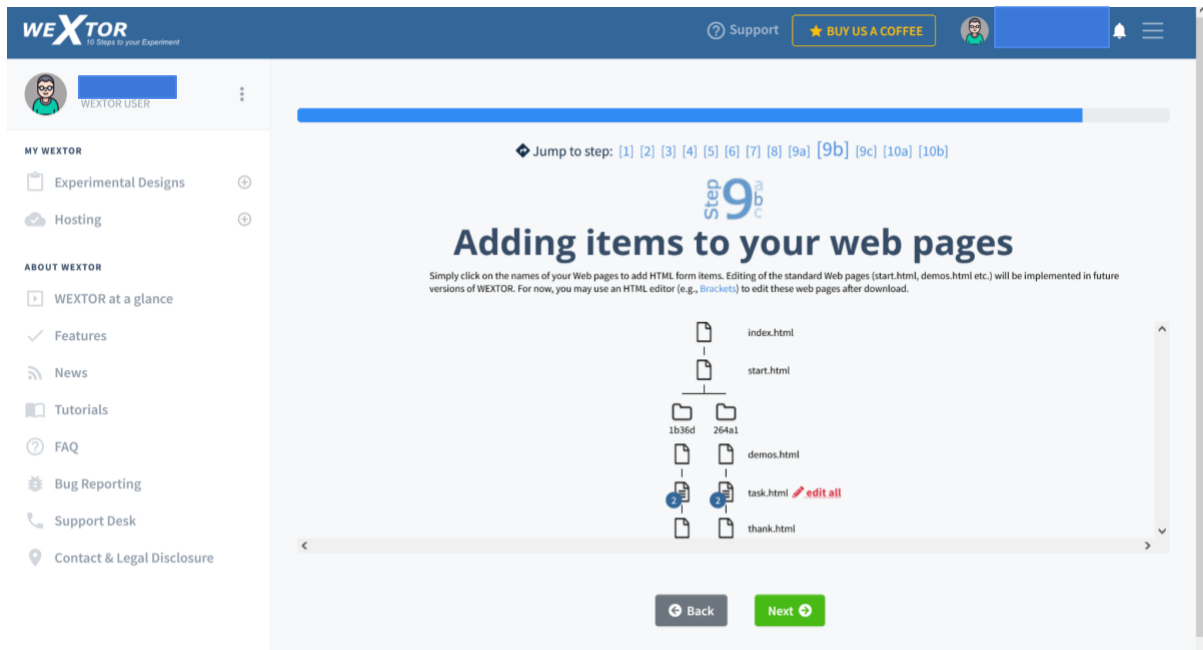
Experimental condition 2 is the abbreviated form for the following setting:

- factor reference point, level 0--->2



If you click on the green “Next” button and then on the blue download icon, your browser downloads the visual display as an archived zip file to your computer. Be sure to note where the file is saved. You can download both the overview list and visual display to view it later when you are not connected to the Internet. You can also change the appearance (layout, font, edges, colors, etc., technically called “CSS style sheet”) for the experiment here in Step 9a. We recommend to select “modern (responsive; round edges)” from the drop-down menu for this example.

Step 9b: In step 9b your experiment gets its items and its content. Before editing single pages of just one between-subjects condition, you should first edit all of them at the same time by clicking on “edit all”. In one editing step, you will place content on the pages that are the same in all conditions. You can select the item from the list of items (e.g. text, radio buttons, visual analogue scale), create the content, and add it to the page.



In our example, we will add a general instruction and the question with two options, as it will be the same for both conditions. Click on the “Text / HTML” item and add the text “Please read below” (later we will modify the instruction for each of the two conditions). Then, add the “Radio Buttons (Vertical)” item, and enter the following information – “What is the most natural way to describe the cup now?” as the question and “2” as the number of answer options.

WEXTOR Open to your Experiment

Support [BUY US A COFFEE](#)

Jump to step: [1] [2] [3] [4] [5] [6] [7] [8] [9a] [9b] [9c] [10a] [10b]

Step 9 Adding items to your web pages (multi-edit)

Currently you are working on the Web page named 'task.html'.

Add items - radio buttons in vertical order

Type in the name for your variable and your question. Next, indicate the number of answer options. Then, press the "Next step" button.

Please name this item:

Type your question here:

Indicate the number of answer options:

Description (optional):

[Back](#) [Next](#)

Click “Next” and on the next page enter values for two answer options: “The cup is 1/2 full” and “The cup is 1/2 empty”. The next Figure shows the multi-edit page in Step 9b after you have added content as described. Then hit the red button.

The edited pages will appear under “Existing items”. Here you can edit them again.

WEXTOR Open to your Experiment

Support [BUY US A COFFEE](#)

Jump to step: [1] [2] [3] [4] [5] [6] [7] [8] [9a] [9b] [9c] [10a] [10b]

Step 9b Adding items to your web pages (multi-edit)

You are in multi-edit mode. Here you can add items to all conditions on a page at once. Multiple items can be modified at once in this mode, but only if they haven't been modified separately yet for individual experimental conditions.

Currently you are working on the web page named 'task.html'

[Edit another / switch mode](#)

Existing items

[Live Preview](#)

| ID | Type | M | Question / Description | Number | |
|--------|----------------|-----|-------------------------------------|--------|---|
| txt_01 | plain_text | [m] | ~>Imagine a 4-ounce measu... | - | Edit Delete |
| rad_01 | radio_vertical | [m] | What is the most natural way to ... | 2 | Edit Delete |

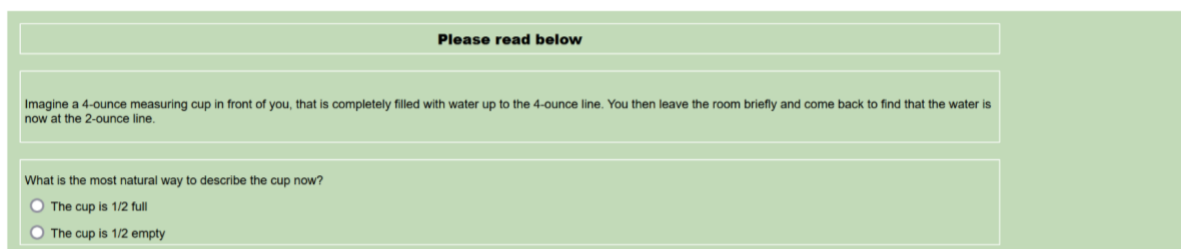
Add items

[Plain Text](#)
e.g., instruction texts

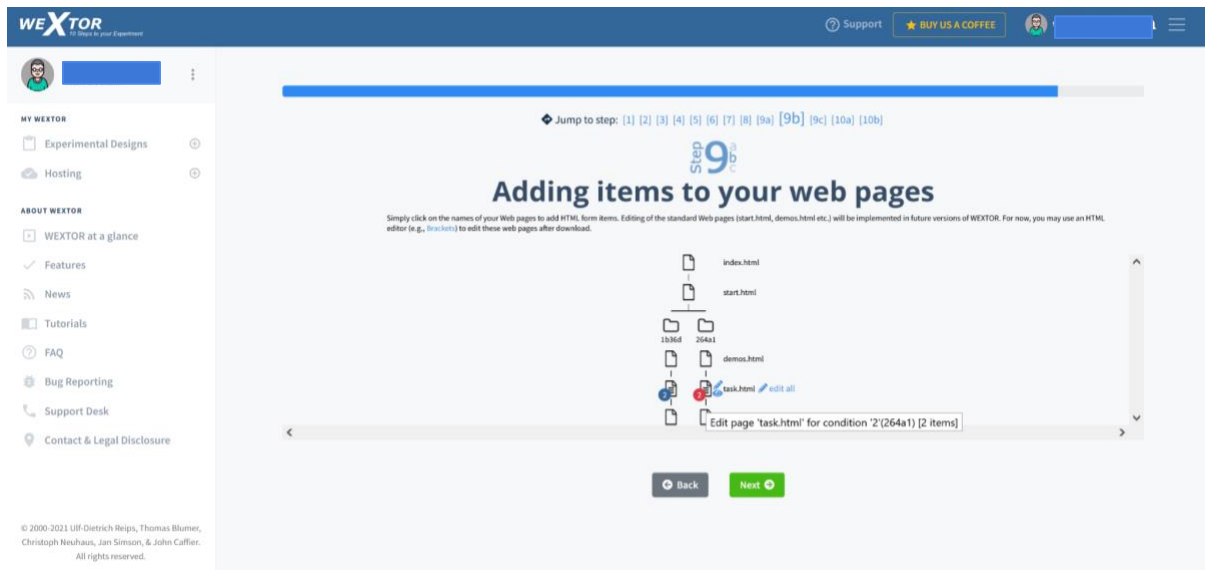
Furthermore, if you click on the eye-icon “Live Preview” it will give you a preview of the page. A new feature of WEXTOR 2022 is that you can see the preview on different digital devices and in different angles (Table view and front view). This preview is not always 100% correct, but it gives you a good idea of the design. Therefore it is important to always test the experiment on different devices as well. The new variables `screen_w` and `screen_h` specify the screen size variables found out via JavaScript, but these may not always be accurate (e.g. for Mac Retina displays). If the design is not the way you want it to be (e.g. if the text is too big for the screen), you can adjust the actual length and width (e.g. size -1cm) or you can do it relatively (e.g. size *0.75).



You can also check out the design in the Web browser:



You can also edit single pages by clicking on the little pencil that appears when you hover over the page that you want to edit.



Do this with the task.html pages in both conditions of your “cup” experiment. You can see the instruction and the question we added in the above steps before. Click on the pencil icon of the text instruction item to modify it according to the condition. Here is the text for the two conditions to copy and paste into each of the “task.html” pages:

4→2

Imagine a 4-ounce measuring cup in front of you that is completely filled with water up to the 4-ounce line. You then leave the room briefly and come back to find that the water is now at the 2-ounce line.

What is the most natural way to describe the cup now?

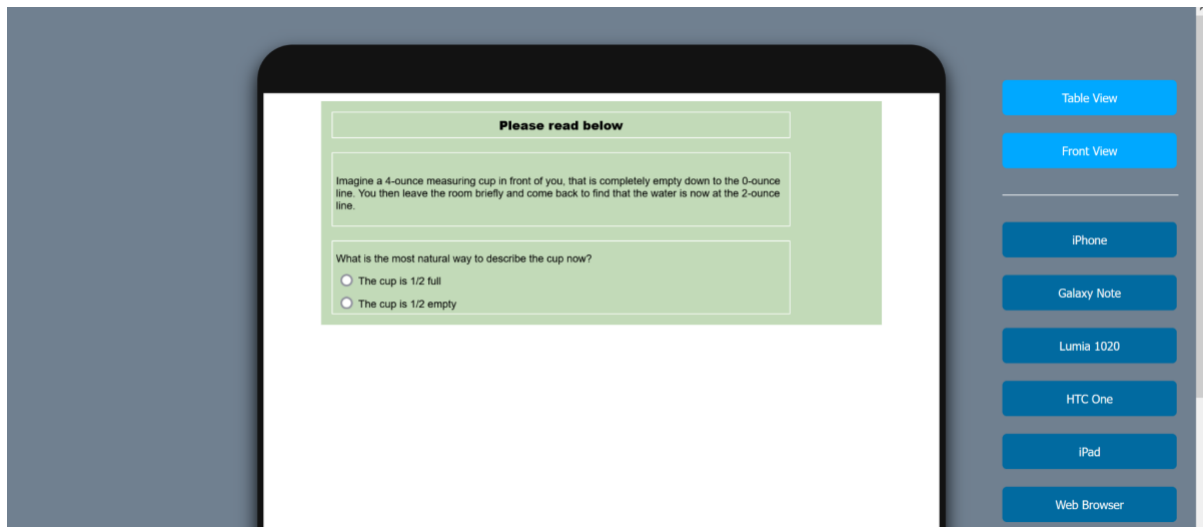
- The cup is 1/2 full
- The cup is 1/2 empty

0→2

Imagine a 4-ounce measuring cup in front of you that is completely empty down to the 0-ounce line. You then leave the room briefly and come back to find that there is now water up to the 2-ounce line.

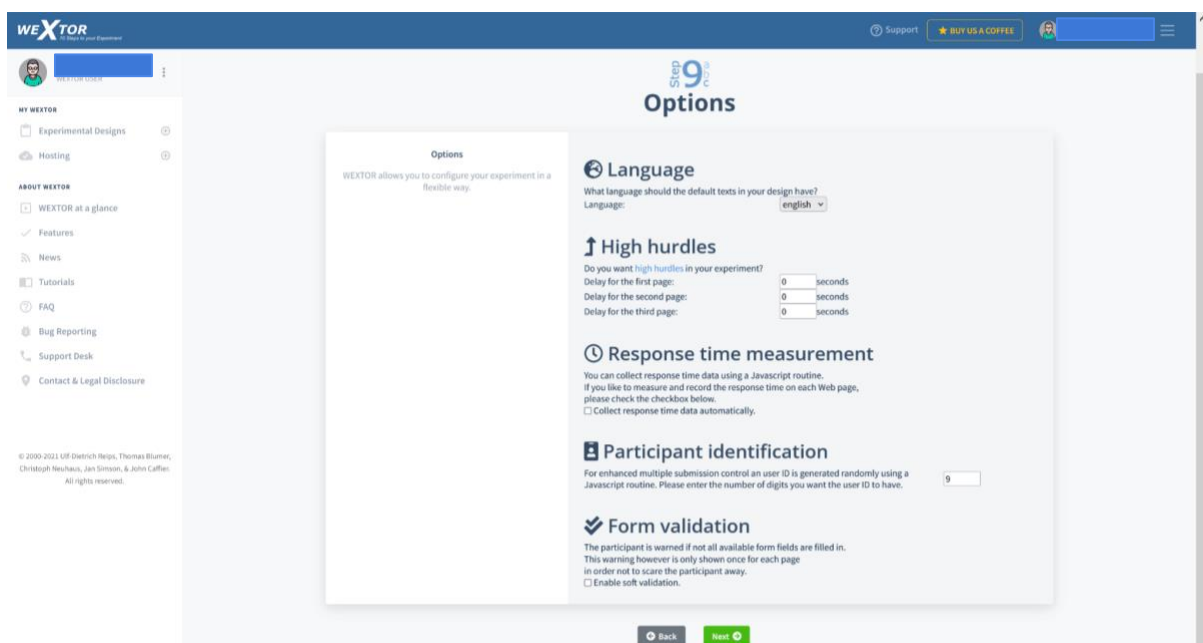
What is the most natural way to describe the cup now?

- The cup is 1/2 full
- The cup is 1/2 empty



Step 9c: In Step 9c you can add or modify some options for your experiment, for example language selection for international participant recruitment, form validation, line break handling on small devices, and double collection of response times. WEXTOR will then collect response times both on the server and client-side (in the participants' web browsers). Also, you can insert an Informed Consent based on a World Health Organization template modified for usage in WEXTOR experiments. This Informed Consent will be displayed on the start page of your experiment and can be edited in the start.html file, if necessary. Further options (described in detail in Step 9c) include the High Hurdle technique for dropout control (Reips, 2002a) and Smart Snowball Sampling for participant recruitment.

Another function in WEXTOR 2022 is that you can optionally put a *quit button* on every page of your experiment. This button might increase the dropout, but it is helpful for debriefing, as participants are shown a debriefing page this way before ending the experiment.



Don't forget to go back to Step 9a to look at your code plan. Check whether everything is as you want it to be. You will need the code plan to identify the meaning of entries during analysis.

Step 10a: You can now download your experimental materials, for example, to conduct offline pretests, further edit using HTML editors (for advanced users, see further below), and to keep a personal record.

The screenshot shows the WEXTOR web interface. The top navigation bar includes the WEXTOR logo, a 'Support' link, a 'BUY US A COFFEE' button, and a user profile icon. The left sidebar contains a 'MY WEXTOR' section with links to 'Experimental Designs' and 'Hosting', and an 'ABOUT WEXTOR' section with links to 'WEXTOR at a glance', 'Features', 'News', 'Tutorials', 'FAQ', 'Bug Reporting', 'Support Desk', and 'Contact & Legal Disclosure'. The main content area is titled 'Step 10a Downloading your experimental materials'. It includes a 'Jump to step' navigation bar with links from [1] to [10b]. The main text explains that the experimental design has been converted into a set of experimental materials, which can be downloaded as a .zip-compressed file. A note advises users to read the instructions on the next page (10b). A large green button labeled 'Download as .zip file' is prominently displayed. At the bottom, there are 'Back' and 'Next' buttons.

Step 10b: Step 10b provides you with information about some of the variable names that may be important to know later during analysis of results.

The screenshot shows the WEXTOR web interface for Step 10b. The layout is similar to Step 10a, but the main content area provides more detailed information. It explains that after decompressing the files, users can open them with a HTML editor like Notepad++ to edit the appearance of their Web pages. It lists predefined variables generated by WEXTOR:

- `id` is the user ID for enhanced multiple submission control
- `vi_x` simplifies your dropout analysis. When a participant visits a Web page, the value 1 is assigned to the variable (e.g. `vi_1` indicates, if a participant visited the Web page 'demos.html')
- `rt_x` measures and records the response time on each Web page (e.g. `rt_1` records the response time on your Web page 'demos.html')
- `i` is a simple control variable needed for the experimental procedure and is of no importance for your data analysis

It also mentions that each HTML document requires a document type declaration (DOCTYPE) and provides instructions on how to declare it. At the bottom, there are 'Back' and 'Next' buttons.

Example: 2x2 Factorial Experiment

To show you how easily WEXTOR handles modifications of designs, we will apply a change. We decide to vary the order of our two answer options. It is best to implement this variation by adding another factor.

Step 1: So we go back to Step 1 and change the number of between-subjects factors to two.

The screenshot shows the WEXTOR interface at Step 1: Defining factors. The left sidebar contains navigation links: MY WEXTOR (Experimental Designs, Hosting), ABOUT WEXTOR (WEXTOR at a glance, Features, News, Tutorials, FAQ, Bug Reporting, Support Desk, Contact & Legal Disclosure), and a progress bar. The main content area has a header 'Step 1 Defining factors' and a sub-header 'Between-subjects factors'. A text box asks 'How many between-subjects does your experimental design consist of?' with a dropdown menu set to '2'. Below the dropdown, there is a note about experimental design limitations and a 'Next' button.

Step 2: A new row with fields appears in Step 2. We add a name and define the number of levels for the new factor: 2.

The screenshot shows the WEXTOR interface at Step 2: Defining factors. The left sidebar is identical to Step 1. The main content area has a header 'Step 2 Defining factors' and a sub-header 'Between-subjects factors'. A text box asks 'Please name your between-subjects factors and indicate the number of levels for each factor.' Below this, there is a table with two rows. The first row has 'reference point' in the 'NAME' column and '2' in the 'NUMBER OF LEVELS' column. The second row has 'order of answers' in the 'NAME' column and '2' in the 'NUMBER OF LEVELS' column. At the bottom, there are 'Back' and 'Next' buttons.

| NAME | NUMBER OF LEVELS |
|------------------|------------------|
| reference point | 2 |
| order of answers | 2 |

Step 3: We add the names of the 2 new levels.

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WEXTOR USER

Jump to step: [1] [2] [3] [4] [5] [6] [7] [8] [9a] [9b] [9c] [10a] [10b]

Step 3 Defining levels

Please name the levels of the factors you defined in Step 2.

Between-subjects factors

Please name the levels of your between-subjects factors.

Factor 'reference point'

NAME

4-->2

NAME

0-->2

Factor 'order of answers'

NAME

full first

NAME

empty first

Back Next

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Step 4: We now have four different experimental conditions to which we can give names or we can keep the ones that WEXTOR proposes:

WEXTOR It's easier to just experiment

Support BUY US A COFFEE

WEXTOR USER

Jump to step: [1] [2] [3] [4] [5] [6] [7] [8] [9a] [9b] [9c] [10a] [10b]

Step 4 Defining experimental conditions

Experimental conditions

Please name your experimental conditions. We already made a naming proposal, which consists of the abbreviated form for the experimental condition and four random characters. Please note that it is wise to NOT use names that reveal information about the underlying structure of your Web experiment.

If your experimental design is incomplete, you may now erase the superfluous experimental conditions. Simply uncheck all experimental conditions you don't need.

☒ Experimental condition 1-1:

11875a

☒ Experimental condition 1-2:

1231de

☒ Experimental condition 2-1:

211e99

☒ Experimental condition 2-2:

221f3c

Back Next

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Step 5 to 8 remain unchanged, so you can directly go to **Step 9a** and look at your experimental design.

WEXTOR
10 Steps to your Experiment

Support BUY US A COFFEE

MY WEXTOR

- Experimental Designs
- Hosting

ABOUT WEXTOR

- WEXTOR at a glance
- Features
- News
- Tutorials
- FAQ
- Bug Reporting
- Support Desk
- Contact & Legal Disclosure

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Your experimental design

Your experiment consists of 2 factors:

Between-subjects factors

Factor 'reference point'

- 4→→2
- 0→→2

Factor 'order of answers'

- full first
- empty first

Experimental conditions

Experimental condition 1-1: 11875a

- factor reference point, level 4→→2
- factor order of answers, level full first

Experimental condition 1-2: 1231de

- factor reference point, level 4→→2
- factor order of answers, level empty first

Experimental condition 2-1: 211e99

- factor reference point, level 0→→2
- factor order of answers, level full first

Experimental condition 2-2: 221f3c

- factor reference point, level 0→→2
- factor order of answers, level empty first

Code plan for 'Experiment_XY'

WEXTOR
10 Steps to your Experiment

Support BUY US A COFFEE

MY WEXTOR

- Experimental Designs
- Hosting

ABOUT WEXTOR

- WEXTOR at a glance
- Features
- News
- Tutorials
- FAQ
- Bug Reporting
- Support Desk
- Contact & Legal Disclosure

Visual display of your experimental design

index.html
start.html

11875a 1231de 211e99 221f3c

demos.html
task.html
thank.html

Back Next

In the visual display of the procedure in **Step 9a** the horizontal line shows when participants are randomly distributed to one of the experimental conditions. In **Step 9b** you can now edit the added between-subjects conditions as well, while the ones you already created before editing are not lost. Make sure that the value assigned to each radio button option stays the same for its meaning, e.g. a 1 should always mean “The cup is $\frac{1}{2}$ full” was selected and a 0 should always mean “The cup is $\frac{1}{2}$ empty” was selected.

Download the new experiment in **Step 10a**. Once you decompress the zip file on your desktop you will get a folder that is named like your experiment. Within this folder you will find a subfolder for each condition, a folder for media files (images, videos, etc.) and some additional files. **Make sure not to rename any of these files and folders!** Double clicking on “index.html” will preview your experiment in your default web browser. This is possible even when you are not connected to the Internet, because the experiment folder is self-contained: everything that is needed in your experiment is right there on your desktop.

| □ Name | Typ | Komprimierte Größe | Kennwortges... | Größe | Verhältnis | Änderungsdatum |
|--------|--------------------------------|--------------------|----------------|-------|------------|------------------|
| 211e99 | Dateiordner | | | | | 10.12.2021 14:44 |
| 221f3c | Dateiordner | | | | | 10.12.2021 14:44 |
| 1231de | Dateiordner | | | | | 10.12.2021 14:44 |
| 11875a | Dateiordner | | | | | 10.12.2021 14:44 |
| js | Dateiordner | | | | | 10.12.2021 14:44 |
| media | Dateiordner | | | | | 10.12.2021 14:44 |
| index | Firefox HTML Document | 1 KB | Nein | 2 KB | 51% | 10.12.2021 14:44 |
| olive | Kaskadierendes Stylesheet-D... | 1 KB | Nein | 2 KB | 72% | 10.12.2021 14:44 |
| source | Firefox HTML Document | 1 KB | Nein | 2 KB | 59% | 10.12.2021 14:44 |
| start | Firefox HTML Document | 2 KB | Nein | 5 KB | 66% | 10.12.2021 14:44 |

If you would like to make any adjustments or think of extra features you would like in your experiment, you can edit the code. While offline editing is not necessary, we recommend becoming somewhat familiar with basic editing. If necessary, make sure to edit the text on your “start”, “demos” and “thank” pages according to the desired content of your experiment. This can be done by opening the pages to be edited in an HTML editor or text editor like [BlueGriffon](#), Dreamweaver, UltraEdit, BBEdit or NotePad, changing the text and code there, and then saving. **Do NOT use Microsoft Word**, as it adds characters that render the pages useless.

The following are examples of what your task web pages in each experimental condition should look like:

Please read below

Imagine a 4-ounce measuring cup in front of you, that is completely filled with water up to the 4-ounce line. You then leave the room briefly and come back to find that the water is now at the 2-ounce line.

What is the most natural way to describe the cup now?

☐ The cup is 1/2 full

☐ The cup is 1/2 empty

Please read below

Imagine a 4-ounce measuring cup in front of you, that is completely filled with water up to the 4-ounce line. You then leave the room briefly and come back to find that the water is now at the 2-ounce line.

What is the most natural way to describe the cup now?

☐ The cup is 1/2 empty

☐ The cup is 1/2 full

Please read below

Imagine a 4-ounce measuring cup in front of you, that is completely empty down to the 0-ounce line. You then leave the room briefly and come back to find that the water is now at the 2-ounce line.

What is the most natural way to describe the cup now?

☐ The cup is 1/2 full

☐ The cup is 1/2 empty

Please read below

Imagine a 4-ounce measuring cup in front of you, that is completely empty down to the 0-ounce line. You then leave the room briefly and come back to find that the water is now at the 2-ounce line.

What is the most natural way to describe the cup now?

☐ The cup is 1/2 empty

☐ The cup is 1/2 full

If you are done editing the code and want to upload your experiment, you can do that under “hosting”. Find out more about the uploading of the experiment in the chapter “Hosting” below.

My Experimental Designs

Under “My experimental designs” (WEXTOR’s ‘design module’) you can find all the experiments you have started creating. Here you can continue creating them, view them, download them, duplicate them, share them, rename them and delete them.

The screenshot shows the WEXTOR web application interface. The top navigation bar includes the WEXTOR logo, a support link, a 'BUY US A COFFEE' button, and user profile information. The left sidebar contains a 'MY WEXTOR' section with 'Experimental Designs' and 'Hosting' options, and an 'ABOUT WEXTOR' section with links to 'WEXTOR at a glance', 'Features', 'News', 'Tutorials', 'FAQ', 'Bug Reporting', and 'Support Desk'. The main content area is titled 'My experimental designs' and displays two experiment cards. The first card, 'Experiment_XY', was created on December 10, 2021, at 2:31 pm, is 2x2 pages long, and has a 'Jump to step' link with options [1] through [10b]. The second card, 'CupExp', was created on December 7, 2021, at 4:09 pm, is 2x2 - 44 pages long, and also has a 'Jump to step' link with options [1] through [10b]. Both cards feature a row of action buttons: Modify (green), View (blue), Download (blue), Duplicate (blue), Share (blue), Rename (blue), and Delete (red).

To run your experiment in WEXTOR, see “Hosting” below. Also, you can share your experiment with other WEXTOR users by going to “My experimental designs” and hitting “Share”.

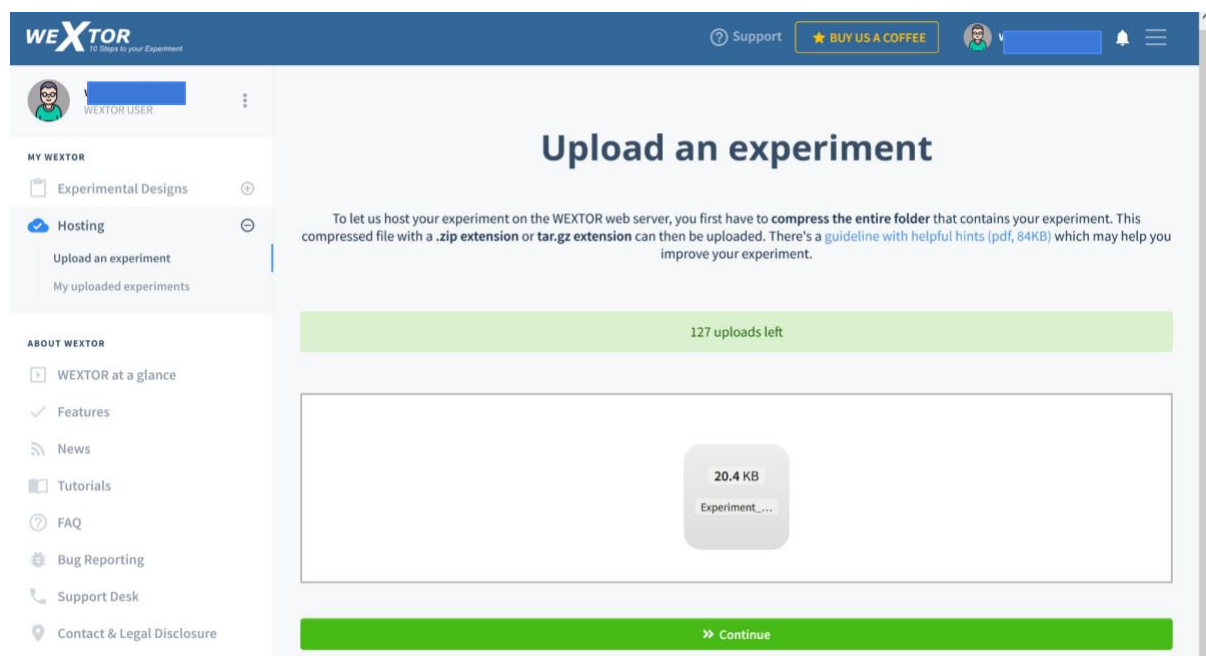
Hosting

Many experimenters prefer hosting their experiments on their own or their institutions' server. However, WEXTOR includes a hosting option: Under "Hosting" you can upload your experiments and view your uploaded experiments.

Upload an Experiment

If you want to upload your experiment on WEXTOR, you first have to **compress the entire folder** that contains your experiment. This compressed file with a **.zip extension** or **tar.gz extension** can then be uploaded (Make sure you do not compress anything else with it – a typical error would be to also compress the folder that contains your experiment folder). There's a [guideline with helpful hints](#) which may help you improve your experiment.

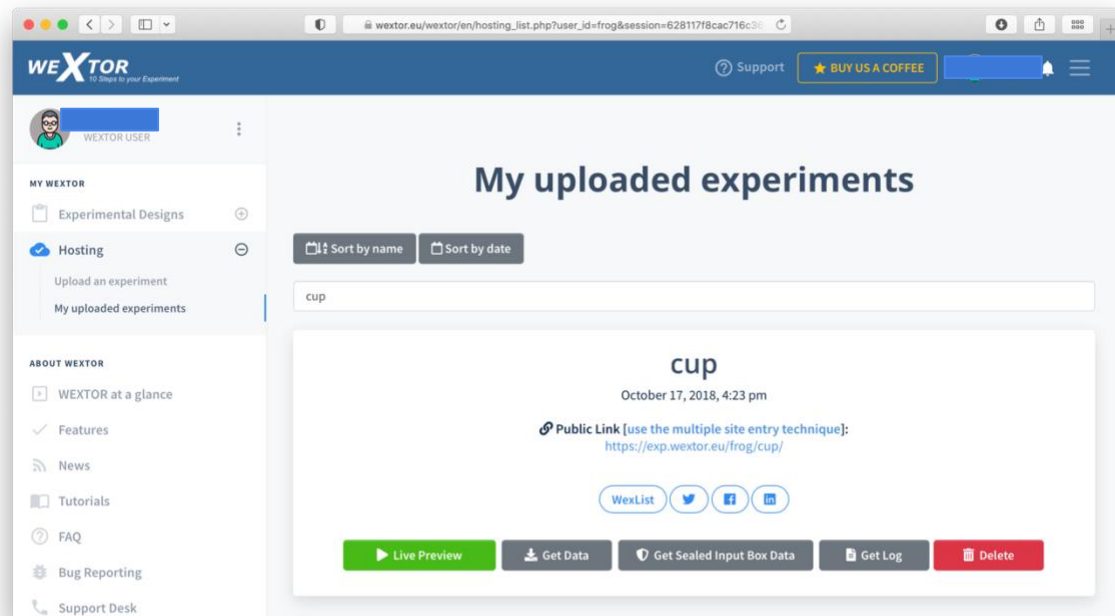
You should then have a file on your desktop that is named the same as your experiment folder and ends in ".zip". Log back in to WEXTOR. Click on "Hosting". Here you can find a box where you can drop your files to upload.



On the new screen (like the one shown below) follow the instructions to upload your experiment. You are ready to go! Click on the link that appears to pretest your experiment. Before you recruit participants you should also read our guideline available from <https://wextor.eu>.

My Uploaded Experiments

Under “My uploaded experiments” you can find all experiments that you have uploaded, try them out, get the data, get the log and delete them.



Data collected in WEXTOR are available in three formats from this panel via the buttons “Get Data”, “Get Sealed Input Box Data”, and “Get Log”. In the section “Frequently Asked Questions” we will explain the type of data available to the experimenter.

Features

WEXTOR has been continuously developed for years to ensure the best functionality, operation and security. These features are currently available:

Design:

- complete and incomplete experimental designs
- experimental (between-subjects and within-subjects) factors
- quasi-experimental (natural) factors
- truly randomized distribution of participants to experimental conditions
- optional distribution of participants to experimental conditions based on levels of quasi-experimental factors
- random or fixed order of blocks
- design is displayed visually and as ordered list

Techniques specific for Internet-based experimenting (Reips, 2002):

- automatic avoidance of frequently made configuration errors in Web experimenting
- non-obvious, but logical naming of files and experimental conditions
- secure hosting
- randomly generated continuous user IDs for enhanced multiple submission control
- multiple site entry technique for control of sampling effects
- implementation of the high hurdle technique for drop-out control
- implementation of the warm-up technique that minimizes drop-out
- automatically generated meta tags (only current content served, shield against spam entries)

Measures:

- server-side response time measurement
- optional client-side response time measurement
- interactive dependent measures and materials (created via content wizard)
- visual analogue scales and radio button scales

Usability

- no need to deal with complex HTML and Javascript code
- works in Lab *and* Web
- visual display of experimental design, in terms of (clickable) folders and Web pages
- automatically generated display of experiment design and procedure, great for reports
- automatically generated code plan (great in teaching!)
- data available in Excel/SPSS compatible format and in log format

Frequently Asked Questions

Data Collection - How does WEXTOR collect data?

WEXTOR saves the collected data in the log file of the Web server. Generally the log file is used to log client requests made to the Web server. Each log file entry consists of a sequence of fields, containing information on the time at which transactions are completed, the requested file, the participants answers etc. If you use WEXTOR to upload and host your experiment, the resulting log file will be freely available to you for download. We recommend to use [Scientific LogAnalyzer](#) for the analysis of log files beyond sample sizes of about 60 persons and designs of more than 10 Web pages each person has to go through. Smaller log files can easily be analyzed by hand. Comfort option: Download of data is also available in Excel/SPSS ready 'each-participant-a-line-each-variable-a-column' format. This option is available separately in paid account mode. Please contact wextor@deusto.es for details.

Log File - Which information should the log file contain?

Most Web servers provide very flexible logging capabilities. The log file is usually written in a customizable format. In order to analyze your log file using [LogAnalyzer](#), your log file should contain the following information: connection ID, date and time at which transaction completed, result, IP address of the client which made the request to the Web server, URL path requested, bytes sent, user agent, referer, time taken to serve the request, and search arguments. If you use [WebSTAR](#) the log file might appear like this:

```
CONNECTION_ID DATE TIME RESULT HOSTNAME URL BYTES_SENT
AGENT REFERER TRANSFER_TIME SEARCH_ARGS
```

If you use the [Apache HTTP Server](#), the configuration for the log file might look as follows:

```
LogFormat "%P\t%{m/%d/%y}\t\t%{T}\t\t%c\t%h\t%U\t%B\t%{User-Agent}\t%{Referer}\t\t%T\t%q\t%D" wextor
CustomLog "/var/log/httpd/access_log_wextor" wextor
```

In the log file you can also identify bots (number and type of requests).

For more information about this topic, read our tutorial [Apache HTTP Server - Configuring the logging capabilities](#) or check out Apache's [Log Files](#) docs.

GET Method - Which method is used to send data to the Web server?

WEXTOR simulates a GET method form submission to send data to the Web server. This looks anything like this:

```
http://www.address.com/file1.html?sex=female&age=29
```

Basically the above URL is simulating a HTML form submission that looks something like this:

```
<FORM METHOD="GET" ACTION="file2.html">  
<INPUT TYPE="radio" VALUE="female" NAME="sex">  
<INPUT TYPE="radio" VALUE="male" NAME="sex">  
<INPUT TYPE="text" NAME="age">  
<INPUT TYPE="submit" VALUE="Submit">  
</FORM>
```

Although they look completely different, both of these examples will have the same result: a variable named sex with the value female and a variable named age with a value of 29 is passed to the Web server.

Generally the GET method transmits data by appending it to the end of the desired URL. There can be an unlimited number of variable/value pairs following the question mark, each separated by an ampersand "&". There is a restriction on the GET method: it has a limit of approximately 1024 characters. This means that any submission that may exceeds 1024 characters must be done through the POST method.