



COMFOCUS

Community on Food Consumer Science



COMFOCUS Toolbox Manual



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Glossary

Term	Definition
Answer option	A questionnaire element that can be linked to a question or item which enables respondents to provide a response to a question/item
Classification	A list of items that can be selected as set of answer options in which each item/option is represented by a common concept
Classification manager	Inventory to search, select, and edit all classifications, including scales, and their items
Common concept	A reusable definition of a 'thing' containing a link to a URI
Common concept manager	Inventory of all the common concepts, their availability, and references
Component	A piece of questionnaire consisting of questions/ items and answer options that operationalises a measure and which can be defined by the researcher
FAIR	An acronym that describes a set of data management principles that together work towards machine readable datasets that are F indable, A ccessible, I nteroperable, and R eusable
Grouping	A questionnaire element that groups a set of questions/items along with their answer options within a component
Harmonised component	A pre-defined piece of questionnaire along with descriptive metadata consisting of questions/ items and answer options which is available in the library and that operationalises a harmonised measure
Harmonised measure	A construct suggested by the COMFOCUS scientific team operationalised to a scientific construct
Harmonised protocol search tool	A tool to search the library of all harmonised components and their descriptive metadata
Metadata	Background information about data, for example fields describing a study or harmonized component
Question/item	A questionnaire element that holds the question or statement which can be presented to a respondent to gather a response

1. Introduction

Welcome to the guideline for Open Call applicants which will guide you through the COMFOCUS toolbox!

COMFOCUS envisions a food consumer science that has become future proof. Therefore, it has as a mission to advance the European food consumer science community beyond its current level of fragmentation, as well as enrich its data so it could support European healthy food choice public policies and private strategies. COMFOCUS will re-organize the food consumer science community to become more united, harmonized, and scientifically advanced and to work according to FAIR principles. In this project, key research tooling is being developed in the multidisciplinary field of food consumer science to achieve exactly that.

In support, the COMFOCUS Knowledge Platform provides one central access point to all researchers in academia and industry. Here they are enabled to harmonise, describe, and organise their data via the tools in the toolbox. By making use of these tools, researchers will experience a reduction in the administrative workload associated with good data management practices, but also realise a higher quality data. Current access consists of:

- Easy Questionnaire tool
- Harmonised protocol search tool
- Harmonised dataset search tool

The tools above have been fully integrated and are accessible through one integrated web environment by clicking on the toolbox on <https://comfocus.eu/knowledge-platform/>, or via direct access through <https://cdp.wecr.wur.nl/>.

Over time, more digital services will become available to support research processes such as data validation, visualisation of data, and scientific analysis. This will facilitate optimal virtual access to data in food consumer science, optimal use of data, networks, and facilities, thus bringing the food consumer science community to its next level.

Currently, the food consumer science domain is fragmented due to a variety of methodological approaches and cultural differences producing a large body of data, but at the same time making it difficult to make comparisons between studies. To tackle this challenge, in the COMFOCUS project, scientists and experts have teamed up to harmonize the most common self-reported measures used in questionnaire-based studies and create comparable data across different studies.

By using the toolbox, consumer researchers can build on the pre-work done by the COMFOCUS team. The tooling supports working according to the RRI principles

(Responsible Research & Innovation) and FAIR data principles. FAIR is an acronym for Findable, Accessible, Interoperable, and Reusable and means that the data is Findable and Accessible to all European researchers, both from academia and industry, Interoperable within the food consumer science domain and with other adjacent research infrastructures, and Re-usable as they can be aggregated and re-analysed across time (for longitudinal trend analysis) and across culture (for cross-cultural analysis) and ultimately across scale levels to allow higher level learning (advanced data analytics).

The current tooling presents users the opportunity to develop their own (pan-European) questionnaire on self-reported measures related to healthy eating. Each user will have access to the COMFOCUS library that contains harmonized measures selected and agreed on by a scientific community that consists of experts in the food consumer science domain. These measures are related to:

- Psycho-social consumer characteristics
- Product/food experiences and expectations
- Consumer behavior as an outcome
- Consumers as agents in the food system
- Socio-demographics

The use of these measures will enable diverse participating researchers to connect and link their data sets and help the harmonization and development of the COMFOCUS research infrastructure (RI) platform.

This guideline is organized in the following way: section 2 provides a workflow sequence of the consumer study life cycle process in the COMFOCUS Toolbox along with information for how to log in to the tool. Chapter 3 will delve into the innerworkings of registering a study on the tool. It offers a detailed explanation on how to provide study metadata, set permissions based on user roles, and set up access details of a study. Chapters 4 and 5 will show how to create and implement a survey design. Chapters 6 and 7 focus on gathering data, validating, and exploring survey results.

If you have any doubts or questions, please do not hesitate to contact Ghalia Nassar at gghalia.nassar@wur.nl.

2. Starting with the COMFOCUS Toolbox

2.1. COMFOCUS Toolbox workflow

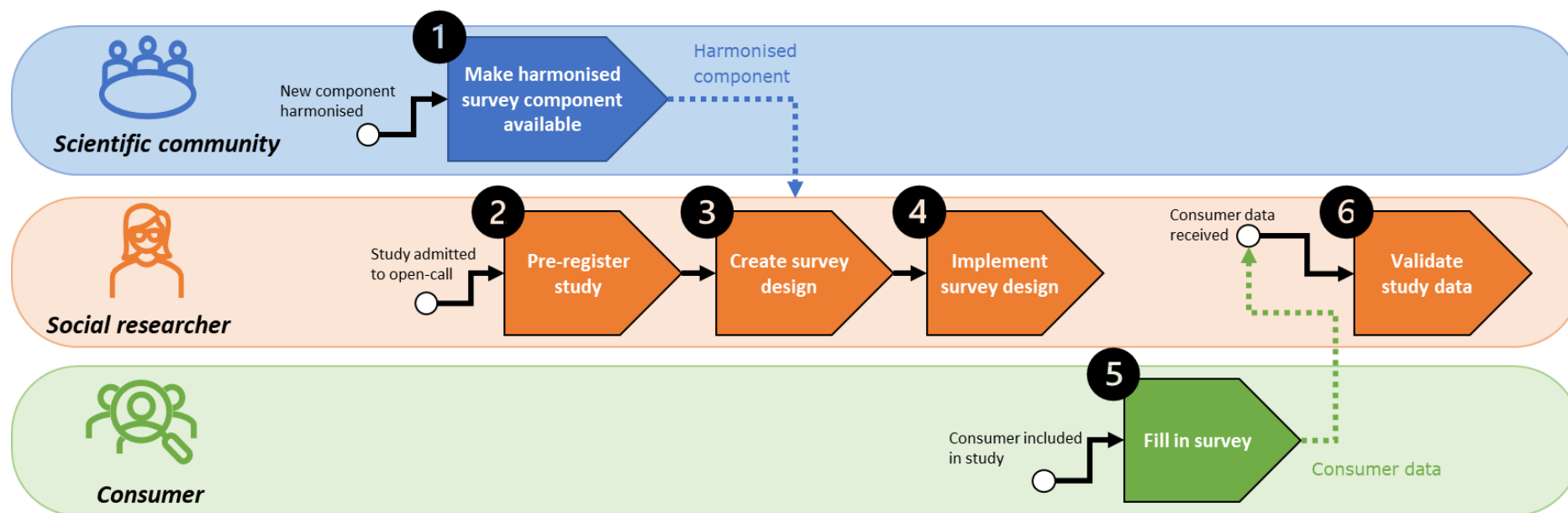


Figure 1. COMFOCUS Toolbox workflow

The consumer life study process in COMFOCUS Toolbox consists of six steps (Figure 1). In the first step, the scientific community (i.e., COMFOCUS) makes harmonised survey components available (1). Next, the food consumer science researcher (e.g., Open-Call applicant) will create a study (2), create a survey design (3), and implement the survey design (4). Next, data will be gathered from consumers (5). Finally, the subsequent dataset is validated by the COMFOCUS platform (6). The validation step is still under development and will not be currently available for the Open Call participants. The future aim is FAIR datasets delivered by food consumer science researchers while the potentially tedious data management activities have been automated.

2.2. How to log in

Logging into the COMFOCUS Toolbox website requires credentials. These credentials are provided when you are successfully registered as an Open Call applicant in the project. Upon receiving your username, please set up a password as soon as possible. Afterwards you can access the COMFOCUS Toolbox website using the link provided on the COMFOCUS website (www.comfocus.eu/tool-box) or directly via <https://cdp.wecr.wur.nl/> and log in with your username and password.

3. Create Study

In this section, a step-by-step guide is provided for Open Call applicants to create their own study and access the harmonized components available on the COMFOCUS Toolbox. This section is divided into three parts: study metadata, study sharing details, and study access details.

3.1. Provide study metadata

Part one is important to ensure the shareability and flexibility of a study. This way a study can be easy to understand, recognize, and find when searched by other researchers. This is in line with the FAIR data principles.

Every new study requires metadata. A study's metadata includes all the necessary details about the study such as study duration, research question, study type, and objective. First, the researcher will start with creating their study by clicking on the plus icon '+' on the left (see arrow, Figure 2). Creating a new study requires filling in the study's content in the metadata fields shown in the pop-up box. After which, the researcher automatically carries the role of *study owner*.

The screenshot shows the 'Create a new study' form in the COMFOCUS Toolbox. The form is titled 'Create a new study' and is part of the 'Search study' interface. It contains various input fields for study details, including Name, Research question, Objective, Contributing researchers, Institution/organisation, Study period start date, Study period end date, Creation date, Keywords, Subject type, Sample size, Study type, Country of the field of research, and Data collection method. A green arrow points to the '+ Show Own Studies' button on the left sidebar.

Figure 2. Create new study

3.2. Provide study sharing details

Providing study sharing details, part two, determines the study's accessibility parameters. It is critical to ensure the safety and privacy of research when setting up a study following the FAIR principles. This enables a study to be as open as possible and closed as necessary. A study owner is the *only* person who can arrange the sharing properties of a study.

Once a study has been created, the metadata, share, link(s), survey(s), and dataset(s) header sections of the study are displayed. The metadata section has been covered in part one (subsection 3.1). The share section shows all the study's sharing details (see upper arrow, Figure 3). This allows the study owner to oversee the sharing properties (i.e., who can see/edit the study contents). *Only* study owners can add user(s) to a study through the button (see lower arrow, Figure 3) as well as edit or delete current users. The role(s) of study users is managed by the study owner. Study users can view the sharing details but cannot oversee. The possible user roles are the following:

Table 1. Study roles and their functions

Study role	Function
StudyEdit	Provides a user the permissions to access and edit a study and its contents
StudyReadPopUpOnly	Provides a user the permissions to only read the study descriptive data
Export Survey	Provides a user the permission to export survey(s)
Download dataset	Provides a user the permission to download dataset(s)
Delete anything	Provides a user the permission to delete any information
Edit survey	Provides a user the permission to edit survey(s)

Search and find survey	Provides a user the permission to search and find specific survey(s)
Edit study	Provides a user the permission to edit contents of a study
User management	...

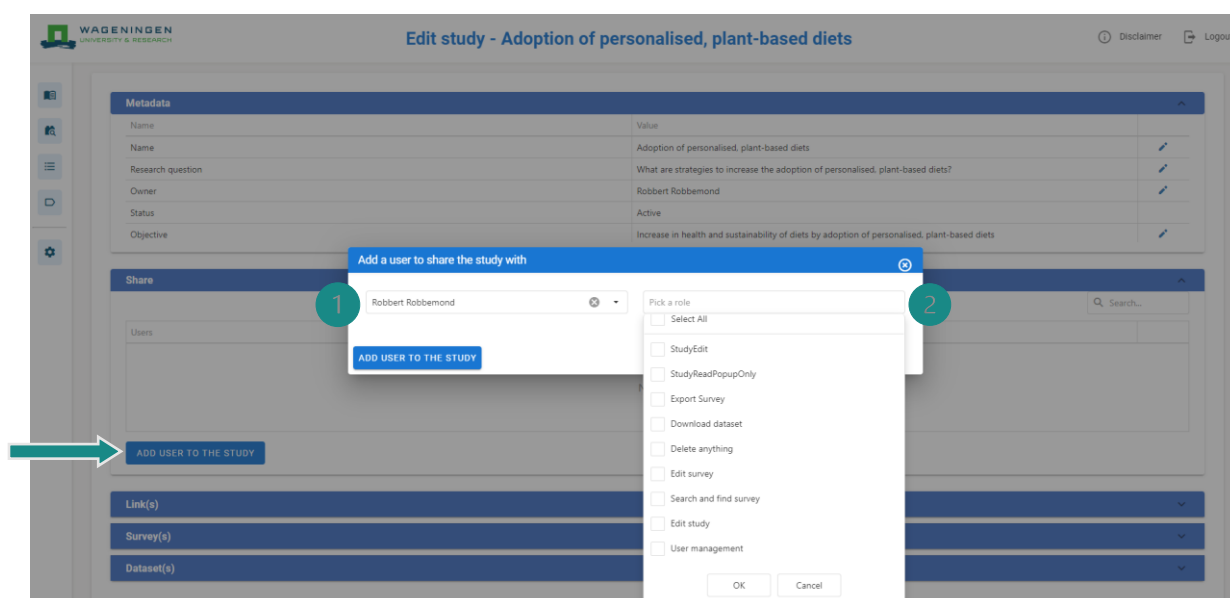


Figure 3. Select user (1) and role (2) for study

The 'Link(s)' header under the 'Share' header is the section where the study owner and users can add anything with a URL address relevant to the study for quick accessibility (e.g., project website, published article). Under the 'Survey(s)' header, all surveys connected to the study will be shown here. A new survey can be added by the study owner and users using the button. In the last header, 'Dataset(s)', all the study's datasets are available. A new dataset can be uploaded using the 'upload dataset' button.

All these sections can also be accessed and edited via the 'Search Study' page. For quick access to the study page, use the book icon '📖' in the navigation bar on the left. By clicking once on the created study, a pop-up window showing the study's overview will open. Please note, the pop-up window will only show the contributing researchers in the study. To see the set of permissions for each researcher as well as further details, use the pencil icon '✎' on the left corner to edit the study (i.e., access to the sections). The study can be deleted by the study owner and/or user(s) assigned role 'delete anything' using the bin icon '🗑'. Lastly, communication is eased by using the mail icon '✉' to send an email directly to the study owner.

Alternatively, when a researcher clicks on a random study in the list, only the mail icon is visible because the researcher has no access to the study or its content.

3.3. Find study and access details

Part three is crucial in the findability and accessibility of studies. Providing accurate study metadata and details enables this part to run efficiently. This is a key part of conducting responsible research following the FAIR data principles.

The Study page (see arrow, Figure 4) is used to search and find studies. (1) Use the top funnel icon '▼' to filter through studies in the study list table. You have three filter options: show your own studies, shared, and/or closed studies. (2) Click on the study to have a quick view of a study's metadata details. (3) In the header row of the study table, there is another funnel icon '▼' next to the 'Research question' column where you can apply quick filters based on research questions. (4) Use the search bar to find relevant studies based on their metadata. Providing the metadata of studies enables these options to operate with ease.

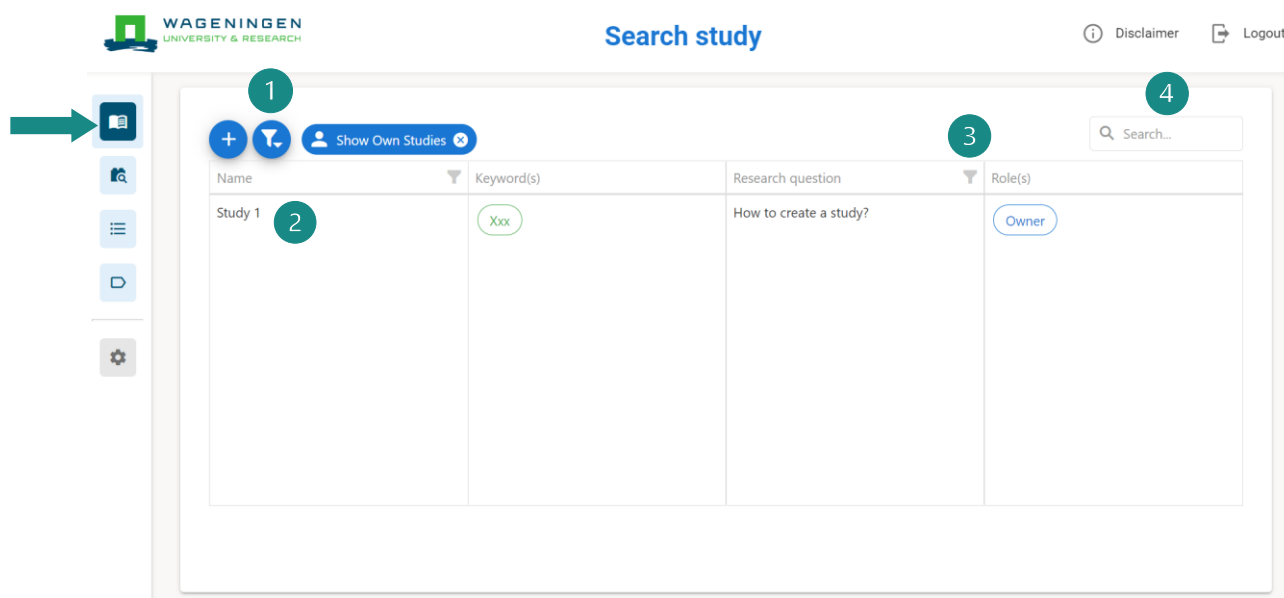


Figure 4. Search study page

4. Create Survey Design

To start the data collection phase, creating a survey design is necessary. This is central to ensure a successful and well-organized collection method. This section has three sub-sections: add new survey to study, select relevant harmonised components, and edit survey content.

4.1. Add new survey to study

Creating a survey from scratch allows for freedom in formulating and designing a survey according to the requirements of the food consumer science researcher.

Surveys can be managed using a study's 'Survey(s)' section. In this header, the study owner/user can add a new survey (see arrow), go to an existing survey using the arrow icon '→', manage the access permissions using the person icon '👤', and/or delete the survey using the bin icon '🗑️'. When the researcher creates/adds a new survey (see arrow, Figure 5), they automatically become the survey owner and can change access permissions hereafter.

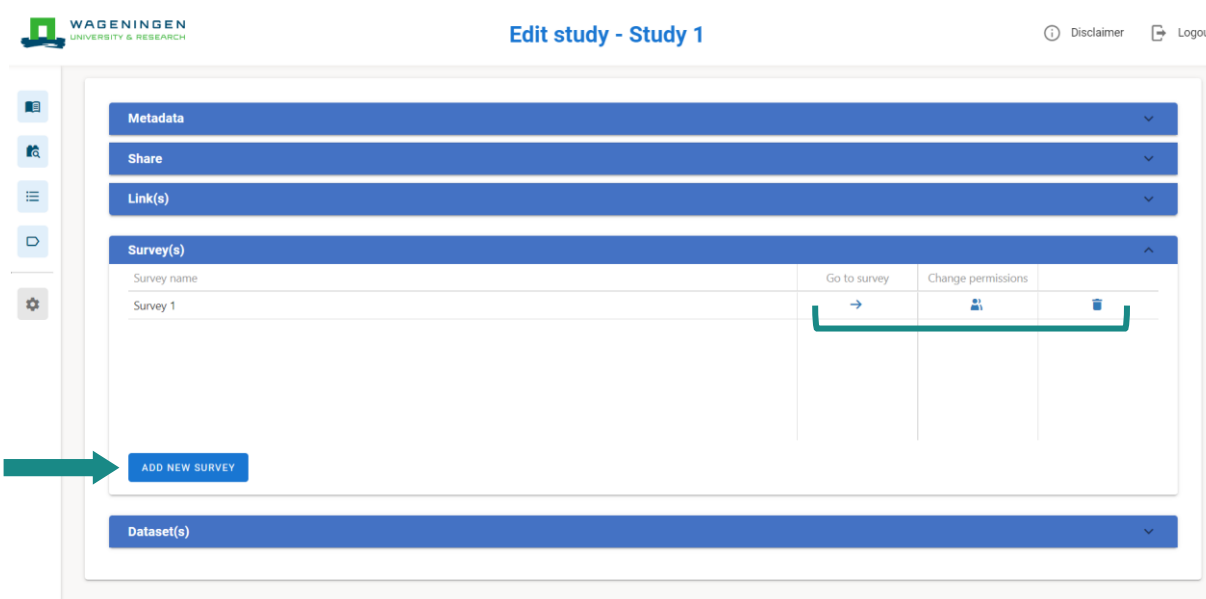


Figure 5. Add new survey

Upon clicking on 'Add new survey', the harmonised protocol search tool will open. The harmonised protocol search tool is the heart and core of the COMFOCUS Toolbox. It is a library featuring all the available harmonised components. A component is a variable that is being analytically measured. Each available component falls under a specific concept which in turn belongs to a certain category. An example of a component is 'food choice questionnaire', it falls under the concept of 'food choice motives' which the component aims to measure. Hence, the 'food choice questionnaire' component belongs to the 'psychosocial' category. A category can have multiple concepts. Similarly, a concept can have multiple components. Lastly, keywords are used to quickly find and identify a component.

For quick access to the harmonised protocol search, use the binocular with magnifying glass '🔍' icon in the navigation bar (see arrow, Figure 6).

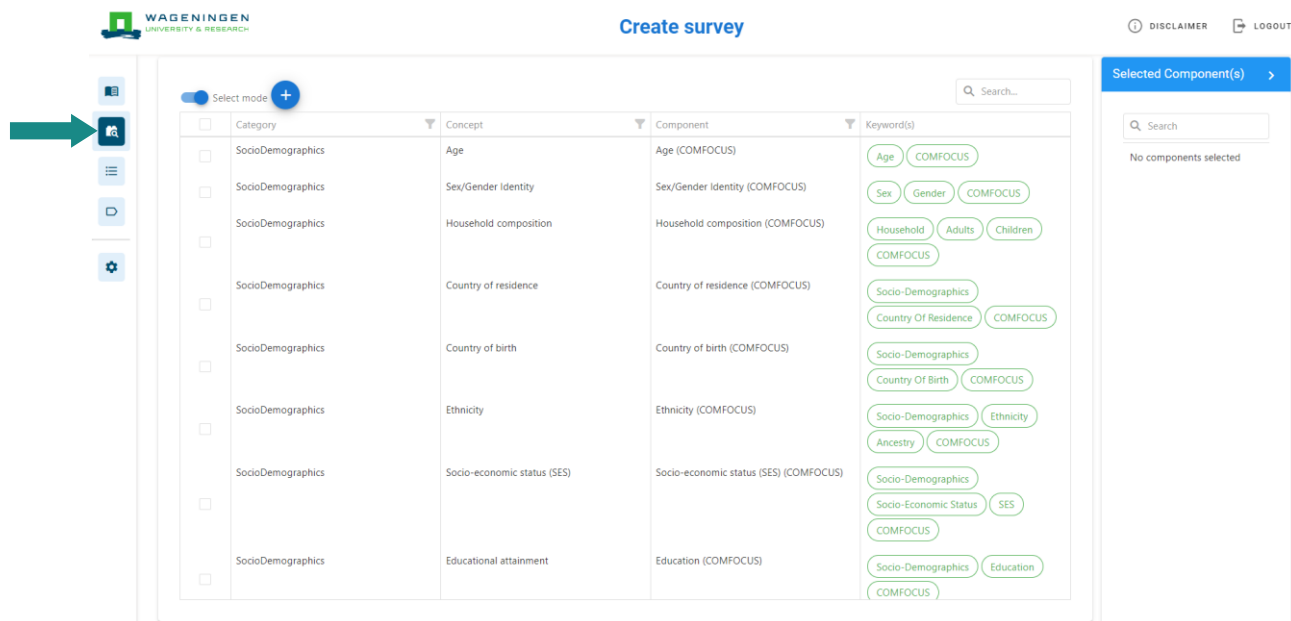


Figure 6. Harmonised protocol search page

There are two modes to view the harmonised protocol search library: search (i) and create (ii) (see arrow, Figure 7).

- (i) To browse through the available components before making your selection for the survey, the data grid mode must be switched to 'Search'.
- (ii) To select desired components to compose a survey, the data grid mode must be switched to 'Create'. The 'Create' data grid mode offers another way to create/add a new survey (more in subsection 3.2).

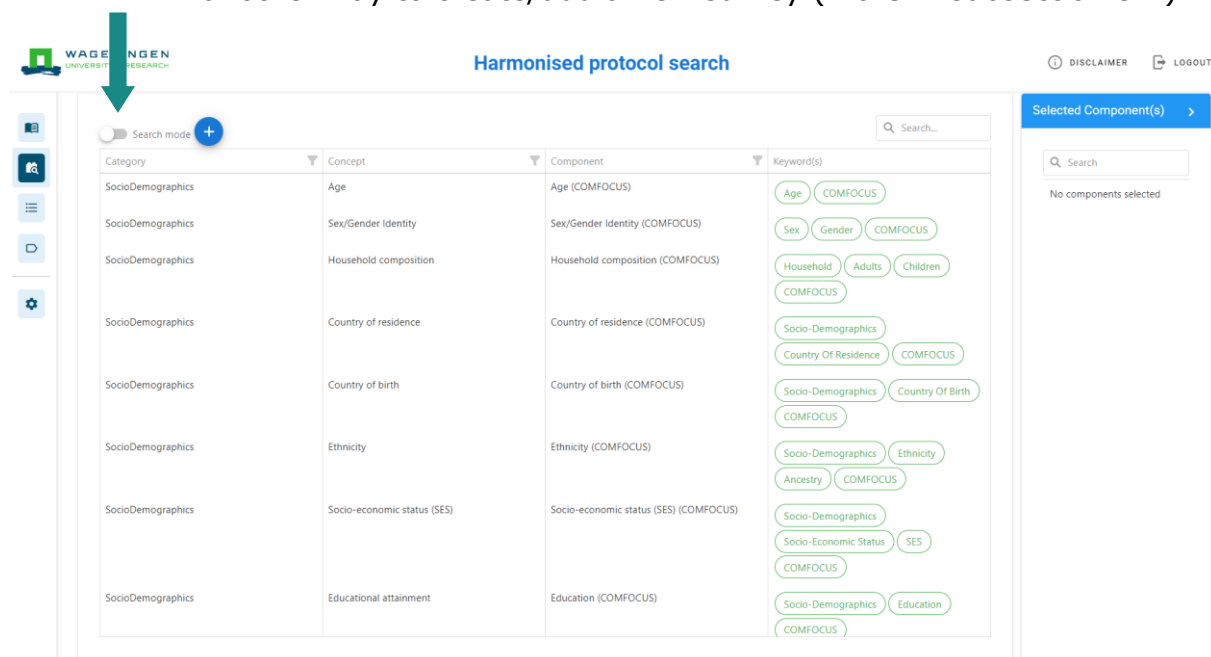


Figure 7. Datagrid mode selection

In the 'Search' mode, clicking on a desired component will show a pop-up window with the component's metadata. The languages available, links to background documents, and other metadata (measure computation, target, reference, concept name, theoretical background, keyword(s), number of items, reverse items, and definition of the component) are presented (Figure 8). The researcher may export component details without metadata using the button.

Name	Value
Language	
Link	
Metadata	
Final measure computation	Score for each motive is calculated by computing the mean of the items corresponding to each factor/motive.
Target	Person
Reference	Step toe, A., Pollard, T. M., & Wardle, J. (1995). Development of a measure of the motives underlying the selection of food: the food choice questionnaire. <i>Appetite</i> , 25(3), 267-284.
Concept name	Food choice motives
Theoretical background	na
Explanatory text	
Keyword(s)	

EXPORT WITHOUT METADATA

Figure 8. Metadata of component 'Food Choice Questionnaire'

Periodically, new harmonised components are added by the scientific community. Going through the library of harmonised components will help familiarize the researcher with the available harmonised components. The metadata of each component helps to better understand the component. Afterwards, the researcher is ready to make a component selection for the survey.

4.2. Select relevant harmonised components

To make a component selection, the data grid mode must be switched to 'Create'. The first step to create a survey is selecting relevant harmonised components using the check box next to each component. The right-hand column 'Component selection' will save the selected components. This makes going back and forth between the two modes possible and efficient.

After the selection is made, an icon will appear at the top of the table. Click on the icon to create survey. Survey details are required before continuation (Figure 9). Firstly, and most importantly, the survey language(s) must be selected. Secondly, a name for the survey needs to be specified. Thirdly, check if the stated 'selected

study' is correct. Finally, the survey can be created by pressing on the 'Create' button!

Please note, the 'Create' button will not appear until the language(s) is selected.

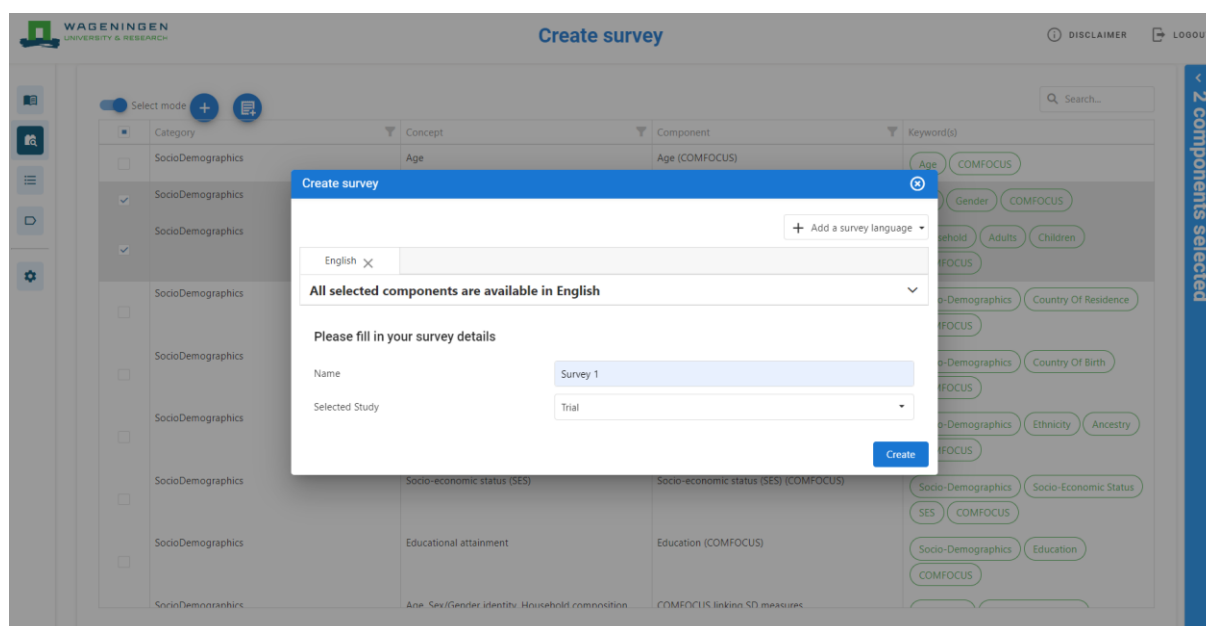


Figure 9. Create survey

4.3. Edit survey content

It is important to customise a survey according to the researcher's study requirements. This subsection illustrates how to edit and adapt a survey and its content.

4.3.1. Survey characteristics

Before the researcher can edit the survey structure and design, a few explanations need to be provided.

Table 2. Description of survey characteristics

Survey characteristic	Description
(Harmonised) Component	The variable being measured by the survey. A component could have multiple groupings.
Grouping	A set of questions/items within a component. Some components may have several factors so, the grouping option is used to group the questions/items based on the factors. This helps in structuring the component and analysing the survey later.
Question/item	A question or statement. It can be single or part of a set of questions/items that measure a component. A short label is often given to a question or item.

Answer option

The manner of responding a question/item. There are several classifications of answer options ranging from dichotomous yes/no, Likert agreement scale, or 'open' answers. Each question/item should have at least one answer option.

An example of a survey design tree (i.e., the survey outline on the left) is shown below for the harmonized component 'Food Choice Questionnaire' (Figure 10).

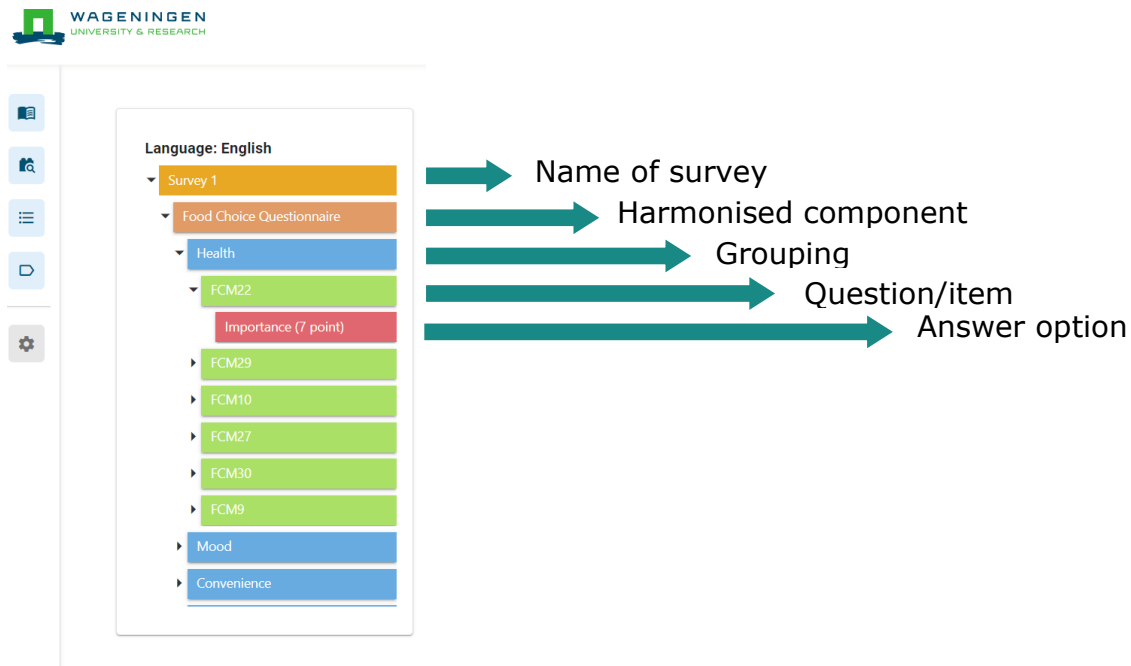


Figure 10. Explanation of survey design tree

Furthermore, the order of the components and question/items in the survey's design tree can be reordered by dragging and dropping the component, grouping, and/or question/item to create the desired survey design.

4.3.2. Survey content

When selecting a harmonised component, groupings, questions/items, and answer options are already preselected (Figure 11). This makes it easy for researchers to create surveys without too much work. The researcher only has to adjust the characteristics to suit the needs of the new survey.

To start editing and structuring the survey's content, click on a component's name (1). Using the pencil icon (2), the researcher can make changes to a component's metadata in terms of name, definition, type, and background to match the survey's desired content.

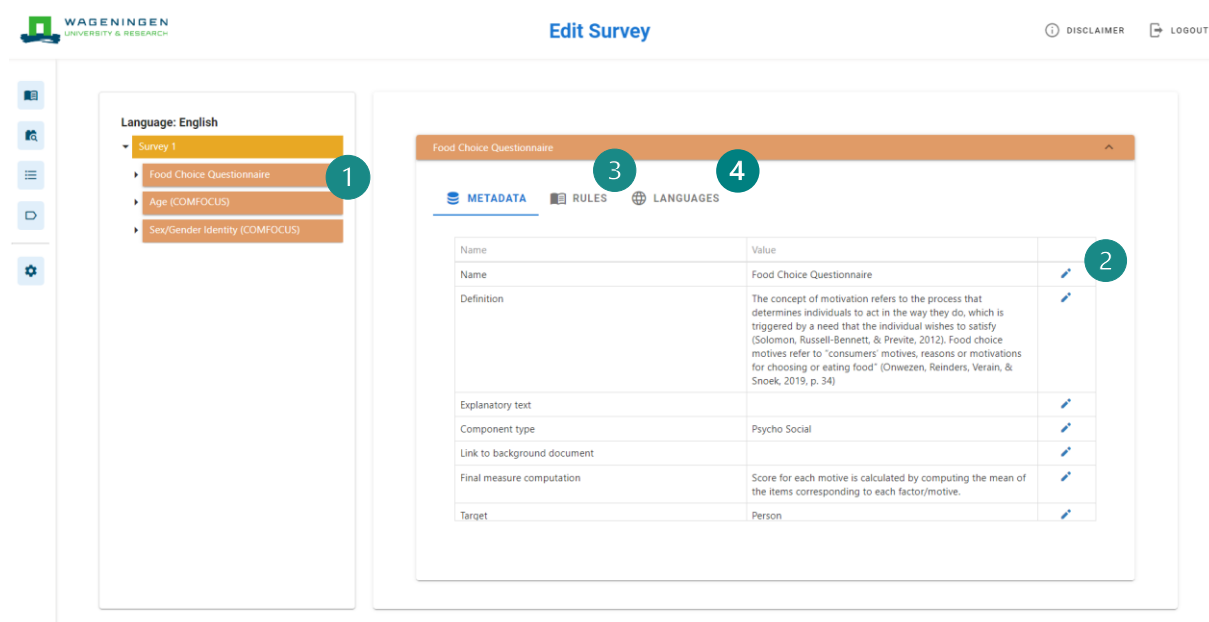


Figure 11. Edit survey components

Most importantly, rules are set for each component by clicking on the 'Rules' button (3). To add a new rule, click on the plus icon '+'. Then, the researcher can choose a question belonging to the component and create a rule for it (Figure 12). They can select answer options, value, operation (whether item is (not) equal, greater, or less than), and the flow (what component, question, and answer to go to after this question). After finishing the rules of the question, select the floppy disk icon '💾' to save the question or select the cancel icon '↶' to cancel the question. A component may have as many rules as needed.

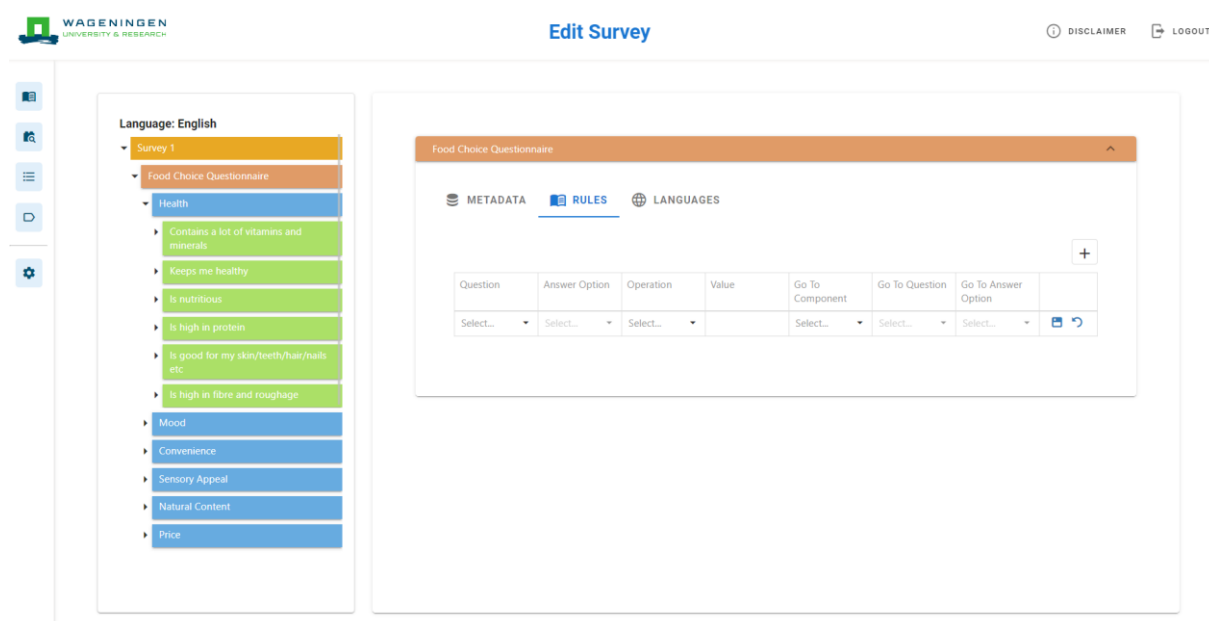


Figure 12. Edit rules of component in survey

Lastly, translation of the items in a component can be manually inputted. This translation will only be applied to the present survey. So, the researcher will have to manually input the translation in other surveys if needed. Study owners can share surveys with other users so, the translation can also be available for those users.

4.3.3. Add (harmonised) component

In case the researcher missed to add a component during survey creation, it can still be added after by right-clicking on the bar displaying the name of the survey (header of the survey design tree) and selecting 'Add harmonised component' or 'Add component'.

- Add harmonised component: from the harmonised components library in the COMFOCUS Toolbox (Figure 13). The available categories, concepts, and components will be displayed. A harmonised component can be selected by ticking the box. Multiple components could be selected in one go.

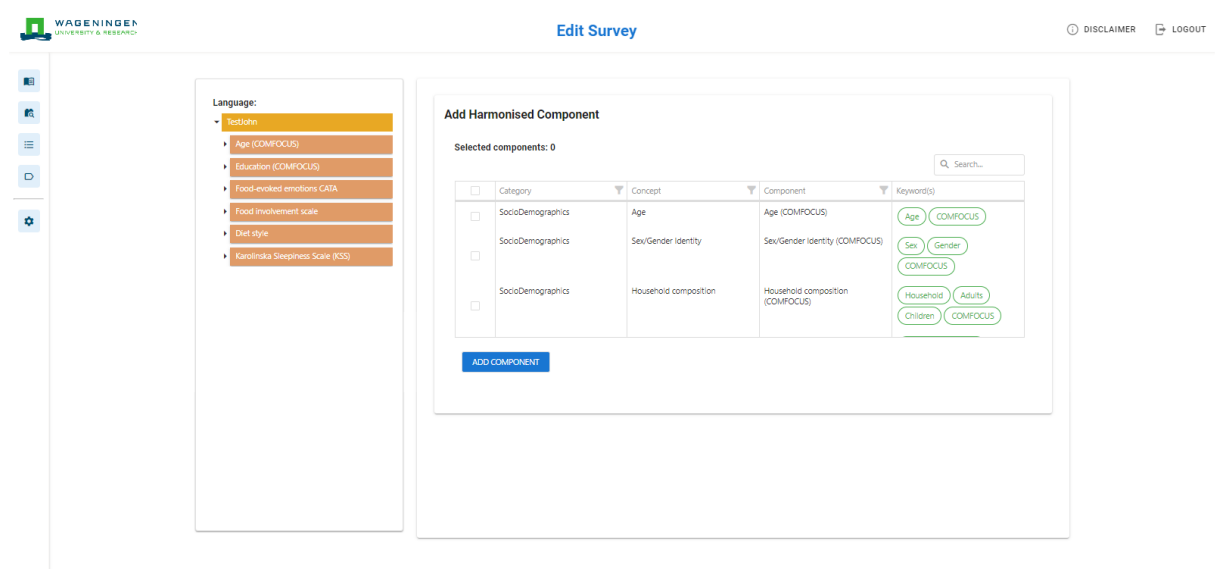


Figure 13. Add harmonised component in survey

- Add component: by creating a new custom component (Figure 14). If there is no suitable harmonised component in the harmonised component library, then a new custom component can be created. Name, definition, category type, and explanatory text of the component are required.

The screenshot shows the 'Edit Survey' interface. On the left, a sidebar contains icons for home, search, list, and settings. The main content area is divided into two panels. The left panel, titled 'Language: English', shows a tree structure under 'Survey 1' with components: 'Food Choice Questionnaire', 'Age (COMFOCUS)', and 'Sex/Gender Identity (COMFOCUS)'. The right panel, titled 'Create a new Custom Component', contains a form with the following fields: 'Name' (text input), 'Definition' (text input), 'Type' (dropdown menu), and 'Explanatory text' (text input). A green 'SAVE' button is located at the bottom right of the form.

Figure 14. Create a new custom component in survey

A component could also be edited by right-clicking on the desired component and selecting one of the following options: add a question/item, add grouping, delete component, or copy component to best suit the survey structure and design.

- Add a question/item: to create a new question in the component (Figure 15). A label for the question, the question itself, and the grouping which it falls under are required to be able to create a new question/item.

The screenshot shows the 'Edit Survey' interface. On the left, a sidebar contains icons for home, search, list, and settings. The main content area is divided into two panels. The left panel, titled 'Language: English', shows a tree structure under 'Survey 1' with components: 'Food Choice Questionnaire', 'Mood', 'Health', 'Convenience', 'Sensory Appeal', 'Natural Content', 'Price', 'Weight Control', 'Familiarity', 'Ethical Concern', and 'Ecological Welfare'. The right panel, titled 'Create a new Question', contains a form with the following fields: 'Label' (text input), 'Question' (text input), and 'Grouping' (dropdown menu). A green 'SAVE' button is located at the bottom right of the form.

Figure 15. Create new question in survey

- Add grouping: to add a new grouping in the component (Figure 16). A new grouping needs a name and definition to clarify what the grouping will enclose.

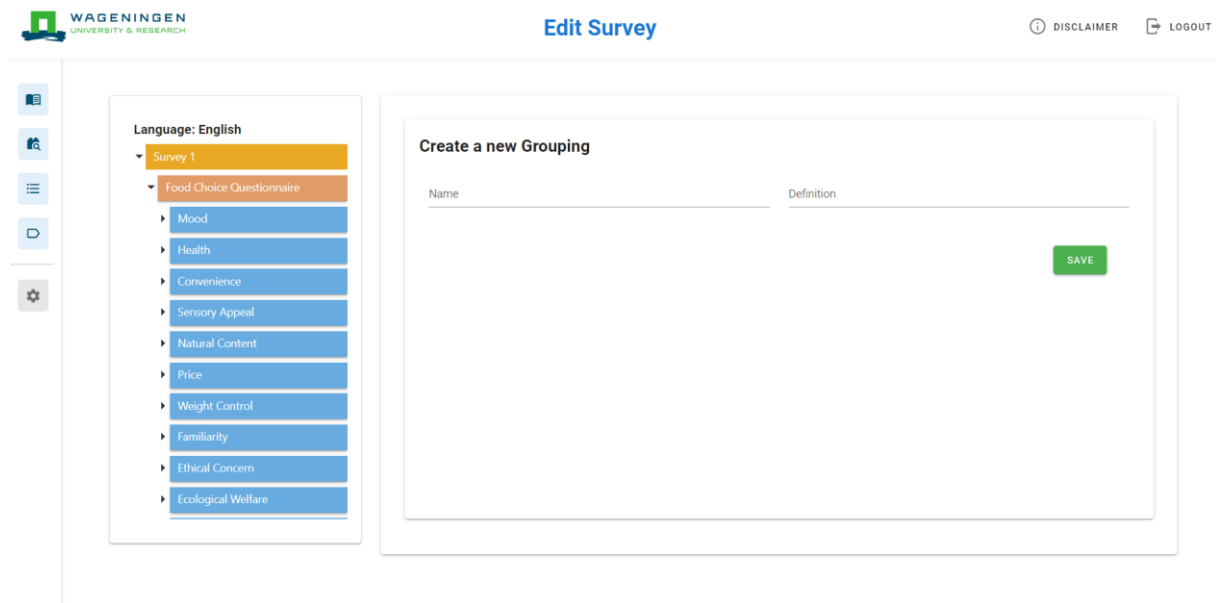


Figure 16. Create a new grouping in survey

- Delete component: to delete component from survey design.
- Copy component: to copy component and paste elsewhere in survey design.

Similarly, a question/item could be edited by right-clicking on the desired question/item and selecting one of the following options: delete question/item, add classification answer, add other answer.

- Delete question/item: to delete question/item from grouping (if any), component, and survey design.
- Add classification answer: to create a new classification answer for the question/item (Figure 17). A classification is selected from a dropdown list that has all the classifications listed in the classification manager.

The screenshot shows the 'Edit Survey' interface. On the left, a sidebar contains a tree view of the survey structure under 'Language: English'. The tree includes 'Survey 1', 'Food Choice Questionnaire', 'Mood', 'FCM16', 'Importance (7 point)', 'FCM34', 'FCM26', 'FCM24', 'FCM13', 'FCM31', 'Health', and 'Convenience'. The main area is titled 'Create a new classification answer option' and features a dropdown menu labeled 'select a classification' and a green 'SAVE' button.

Figure 17. Create a new classification answer option in survey

- Add other answer: to create a custom answer option (Figure 18). A name and description to the answer option are required.

The screenshot shows the 'Edit Survey' interface. On the left, the same survey tree is visible. The main area is titled 'Create a new answer option' and features two input fields: 'Name' and 'Description', followed by a green 'SAVE' button.

Figure 18. Create a new answer option in survey

5. Implement Survey Design

Implementing a survey design means exporting the survey so it can be used. The metadata of a survey can be exported through the study page.

To export a survey, the researcher needs to be either the study owner or has the export survey role assigned. The survey can be exported using the quick access pop-up box of a study on the 'Search study' page (see Figure 19). Scroll to the section 'Survey, click on the button 'Export', and a pop-up box will appear.

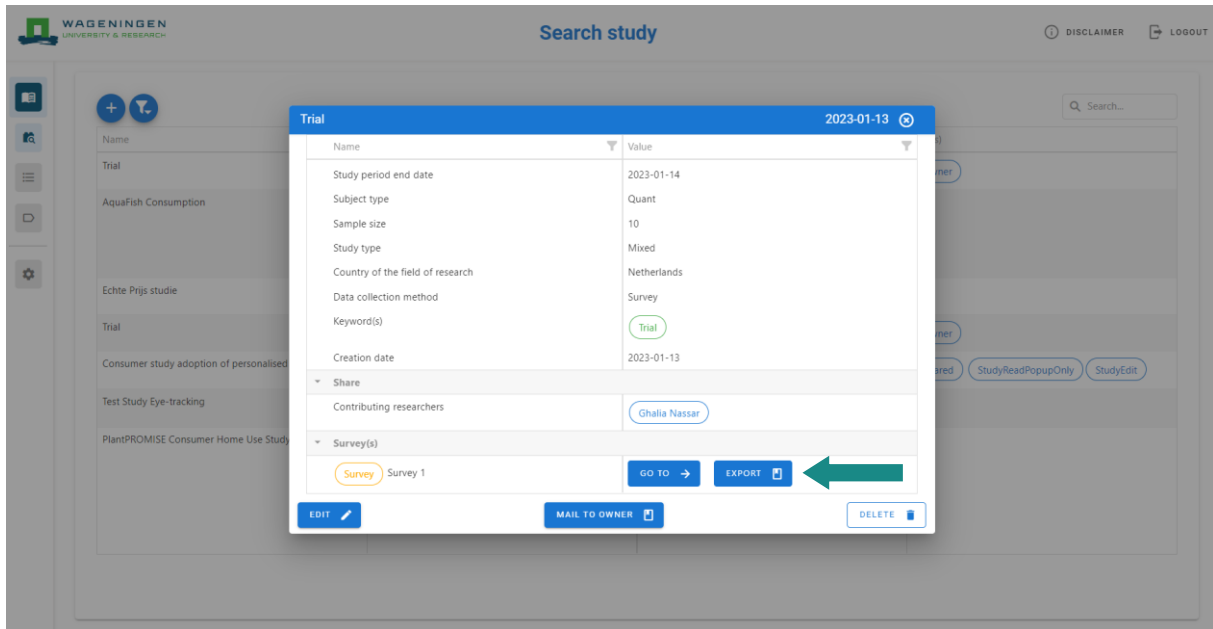


Figure 19. Study quick access pop-up box

There are 3 export types: without metadata, with metadata, and Qualtrics (this type is still not active, but will be active in the future) (see Figure 20). Choose your desired export type and click on 'Export'. The export is in a Microsoft Word format for convenience purposes.

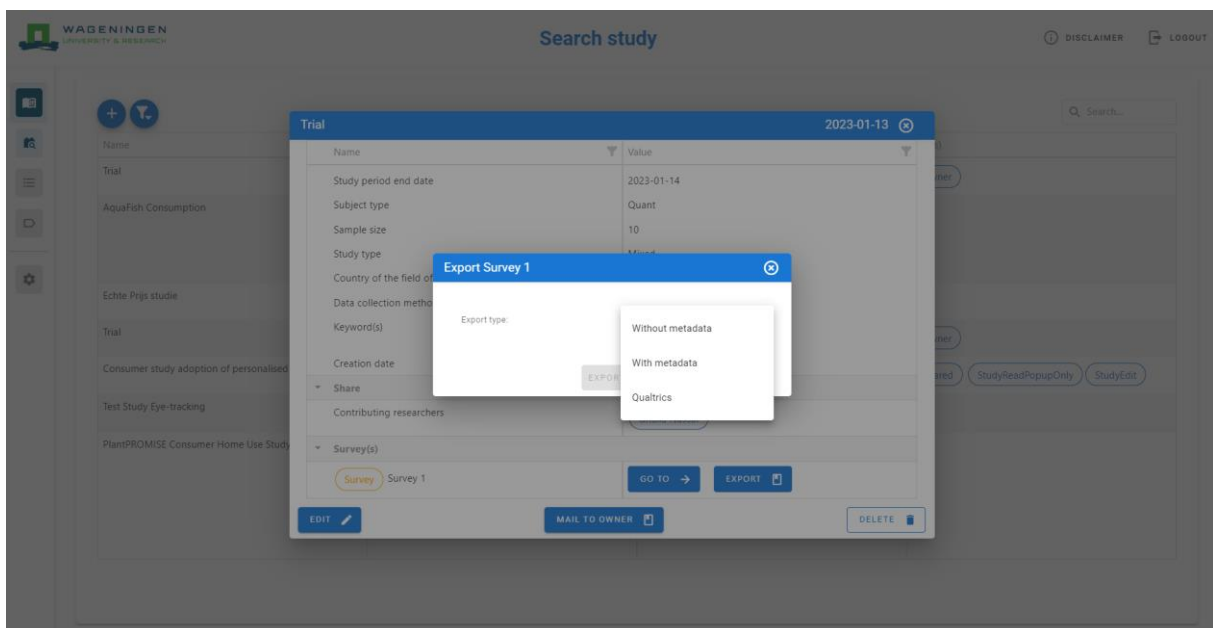


Figure 20. Export survey

Figure 21 shows an example of an exported survey without metadata. Please note that exporting the metadata allows for easier transfer of information to other parties such as a market research agency.

Figure 21. Example of exported survey (without metadata)

6. Fill in Survey – for Consumer

Future integration with commercial survey tooling (e.g., Qualtrics) through exporting the survey to the survey tool provider is expected. The exporting of the survey may take place in a commercial survey tooling (e.g., Qualtrics) or a consumer marketing agency. For now, a survey tool/service must be configured manually by the researcher. In the future, integration is desirable.

After implementing the survey design, now it is time for the data gathering process to start. The data collection process will take place through a commercial survey tooling (e.g., Qualtrics) or by forwarding it to a market research agency. The survey will be filled by consumers who will provide the researcher with the data needed to proceed with the study.

7. Future Developments

This section is dedicated for the future improvements and enhancements of the COMFOCUS Toolbox.

7.1. Validate and explore survey data

Data validation of a study is still under development.



COMFOCUS

Community on Food Consumer Science