AgreeCalc - User Manual

June 18, 2018

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1 Installation and Configuration

1.1 About AgreeCalc

AgreeCalc is a tool developed for the Natural-language Processing (NLP) area, with the objective of determining the agreement coefficient between multiple annotators in an annotation scheme. This manual is about the version 1.2, distributed under the terms of the GNU General Public License, either version 3 of the License, or (at your option) any later version.

1.2 Installation

To be able to run the program, the system must have Java[1] in version 1.7 or superior and R[2] with the library *irrirr*[3] installed. When these dependencies are resolved, the user can run the file AgreeCalc_v1.2.jar, either

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[1]Download Java - https://java.com/pt_BR/download/
[2]Download R - https://java.com/pt_BR/download/
[3]irr description - http://cran.r-project.org/web/packages/irr/irr.pdf

by double-clicking the file or by command line, and the system will show it's initial screen as in Figure 1.

Figure 1: Presentation screen.

Although there is no proper installation step, at the first use, the user will have to configure the path to the Rscript file, that was created during the R installation, which AgreeCalc is going to use to make the calculations. To do so, the user just needs to click on the "Advance" button at the initial screen, and the file search screen will appear (Figure 2).
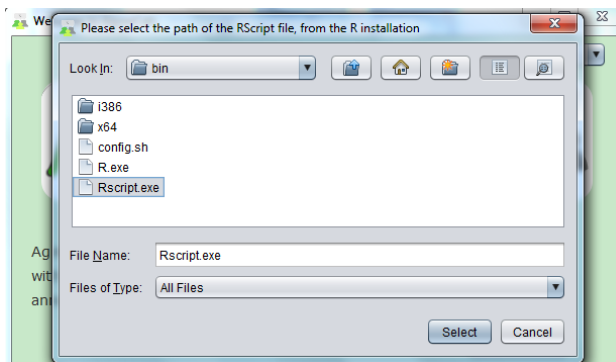

Figure 2: Rscript selection.

If the Rscript file can't be located at the chosen path, the program is going to request a valid path again. To change the Rscript location after the initial configuration, the user can click on the menu "Options" and then on "Change R location...".

During the first use, this is the only additional step. In the next sections, we are going to explain how to use the tool.

2 Advance to the main screen

When the user clicks on "Advance" in the initial screen, the dialog shown in Figure 3 will be presented. In this dialog the user needs to inform the folder which contains the annotation *corpus* to analyze. To do so, the user can enter the folder path manually or click on the "..." button, that is going to open a file selection screen where the user can search and select the correct folder (Figure 4).
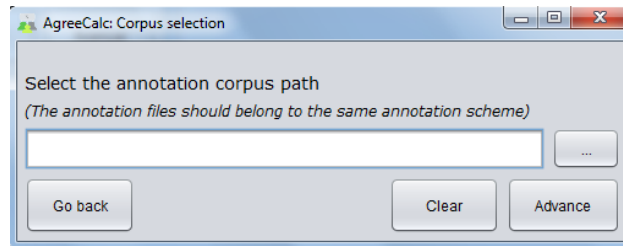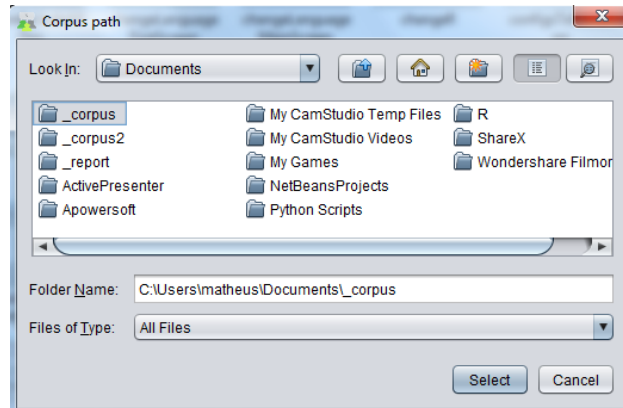
Figure 3: Corpus selection.

Figure 4: Corpus's folder path search.

In case of mistake, the user can click on the "Clear" button, which will erase the textbox's content. When the correct path is set, the user can click on "Advance" and the program is going to load the data (Figure 5).
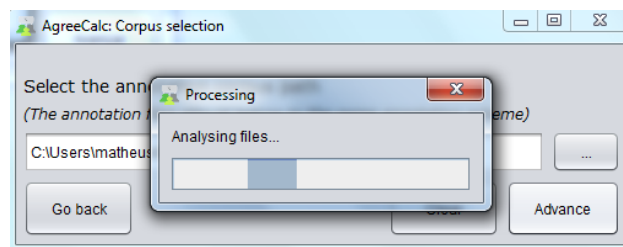

Figure 5: Loading screen.

If the program doesn't find a problem with the files' format (that must follow the definition made in (ROMAN, 2013)), the main screen will be shown (Figure 6).
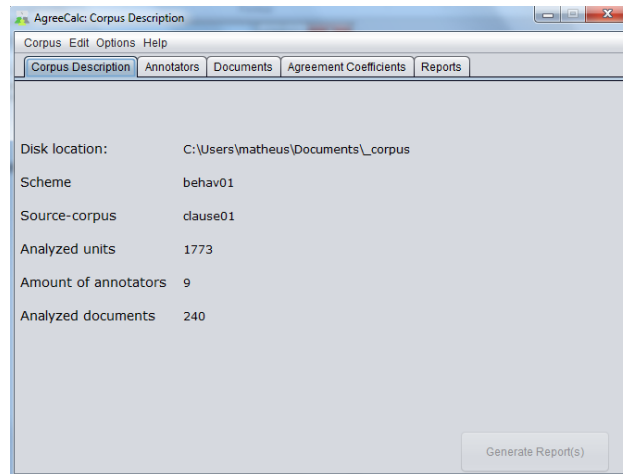
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Figure 6: Main screen.

If it encounters problems while loading files, the program will present an error message and won't show the next screen. It will then be up to the user to provide a path with a valid corpus for analysis.

3 Main Screen

From the main screen (Figure 6) the user has access to all AgreeCalc's functionalities. We will start the explanation from the functions provided by the menus, and then explain each of the program's tabs.

3.1 Corpus Menu

This menu contains operations related to the *corpus* under analysis which, for now, refers to changing the *corpus*. In addition, it also includes the option to terminate the program.

3.1.1 Change corpus under analysis

If the user wants to change the corpus under analysis, simply click "Corpus" and then "Change corpus..." (Figure 7). When you do this, the corpus selection screen opens again.
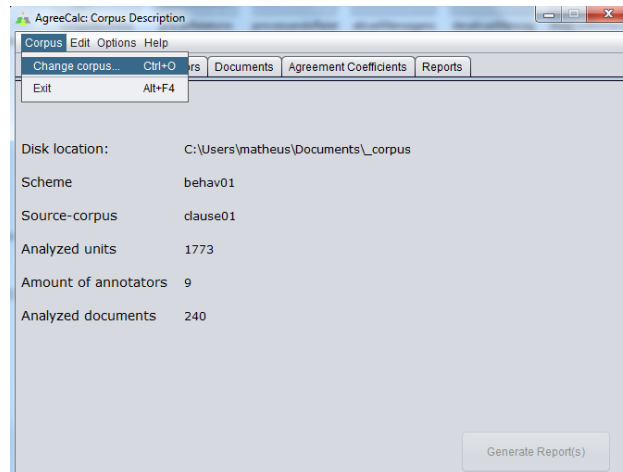
Figure 7: Change corpus menu.

If you change your mind, simply click on "Go back" (Figure 8) that the program will return to the main screen.
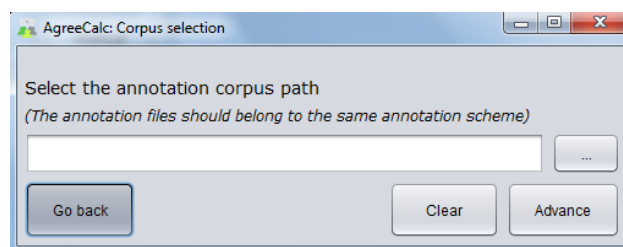

Figure 8: Return button.

The option to return is only available as long as the user does not click the "Advance" button in the corpus selection screen, because clicking this button will cause the data of the previous corpus to be forgotten. For accidental errors not to occur, the program displays a dialog asking if you are sure you want to proceed (Figure 9).
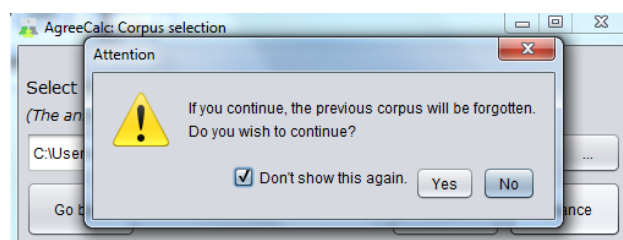

Figure 9: Confirmation dialog.

In order not to be too intrusive, the dialog has the option of no longer being displayed, just check the checkbox before replying that it will not appear in the next executions. If the user wants to enable these dialogs again, one must use the function available in the menu "Options" > "Enable confirmation messages".

The corpus change function can also be accessed by the "CTRL+O" shortcut.

3.1.2 Exit the program

As an option to terminate the program, the user can utilize the "ALT+F4" shortcut or click in the menu "Corpus" > "Sair" (Figure 10).
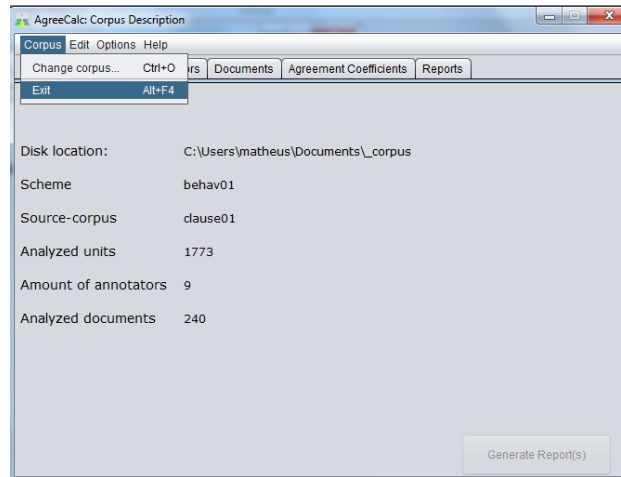

Figure 10: Terminate execution.

3.2 Edit Menu

This menu contains functions that assist in the manipulation of the lists of annotators and documents presented by their respective tabs.

3.2.1 Undo and Redo alterations

These functions are made available as soon as any changes occur in the lists contained in the Annotations or the Documents tab (Figure 11). They function basically as tools to undo ("CTRL + Z") or redo ("CTRL + Y") the last changes made to the lists. An execution of one of these operations undoes or redoes only one alteration, where a alteration can be seen as a click that resulted in a change in the lists (by using either the >> and << buttons, or the Add and Delete All buttons).
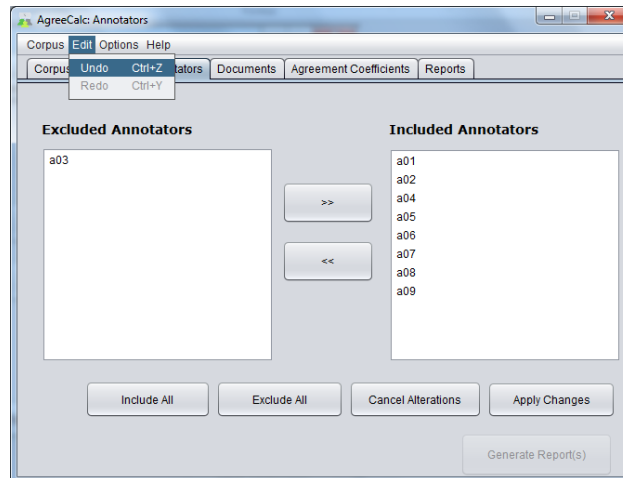
Figure 11: Example of the undo function available for use.

To perform these operations, AgreeCalc keeps a history of the last 10 changes made.

3.3 Options Menu

3.3.1 Change R location

This option allows the user to change the configured Rscript path, in the same manner as in the first access, the dialog will remain open until the program receives a valid Rscript path.

To access the function, just click in the menu "Options" then on "Change R location...". When that happens, the file selection screen will appear (Figure 12).
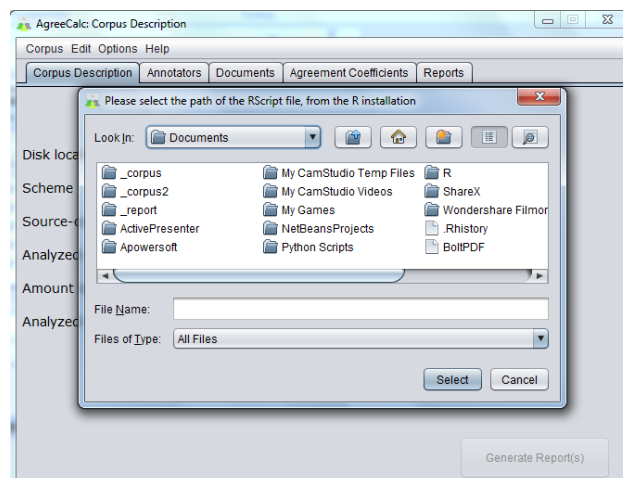

Figure 12: Change Rscript path.

3.3.2 Change display language

There are two places in AgreeCalc where the user can change the display language: in the initial screen (Figure 13) or by the main screen (Figure 14), accessing the menu "Options" > "Language" and then clicking the desired language.
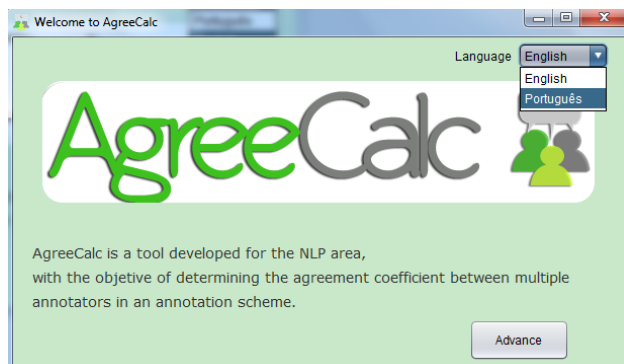

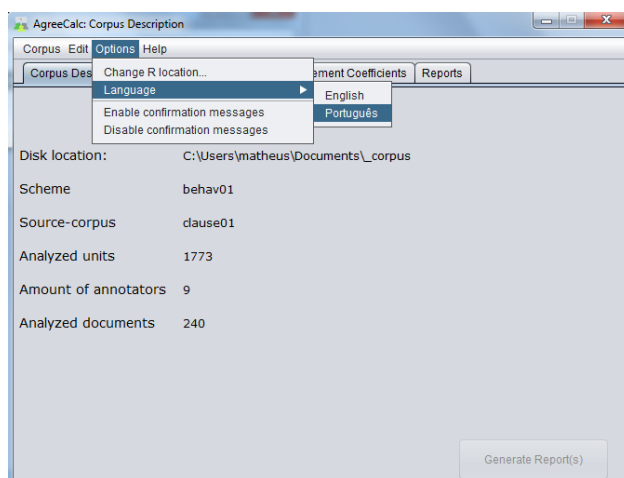Figure 13: Change language, presentation screen.

Figure 14: Change language, main screen.

When choosing a display language, all application labels (not the corpus under analysis) will be displayed in the chosen language. Currently, AgreeCalc makes it possible to display in Portuguese and English.

3.3.3 Enable and Disable confirmation messages

AgreeCalc, by default, displays confirmation messages for functions or actions that may disrupt the interaction with the tool in some way, either because they take a little longer than the others, because they are irreversible or can't be interrupted, or even overwrite previous changes.

These messages are displayed in the form of confirmation dialogs, such as the one shown in Figure 15, and the user has the option to prevent the program from displaying such messages. For this there are

two means, the first is to check the box "Don't show this again" that appears along with the message. After the user checks the option and respond to the dialog, new messages about the same action type will not be displayed.
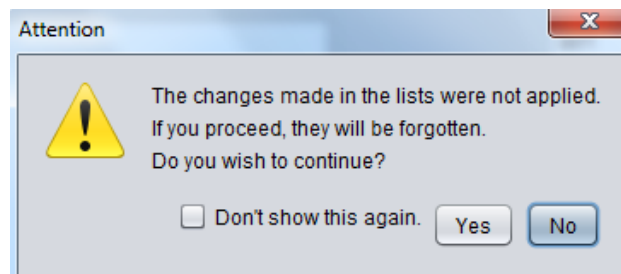

Figure 15: Confirmation dialog.

The second way it to deactivate all confirmation dialogs, by the means of the function "Disable confirmation messages" in the "Options" menu (Figure 16). When using this function, the program will display a message indicating that the dialogs have been successfully deactivated.
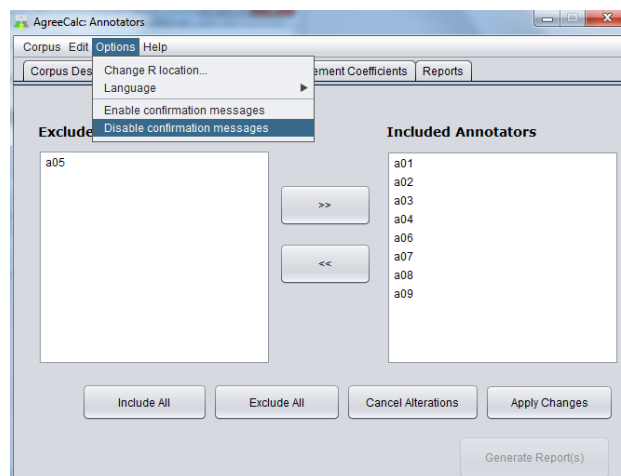

Figure 16: Disable confirmation dialogs option.

If the user wants to enable confirmation messages again, simply use the "Enable confirmation messages" function in the "Options" menu, which will cause all the confirmation dialogs to be displayed again (even if the user has selected the option of not displaying the messages again in the dialogs). After using this function, the program will display a message indicating that the dialogs have been successfully activated, and from this point users can disable them by following any of the methods mentioned above.
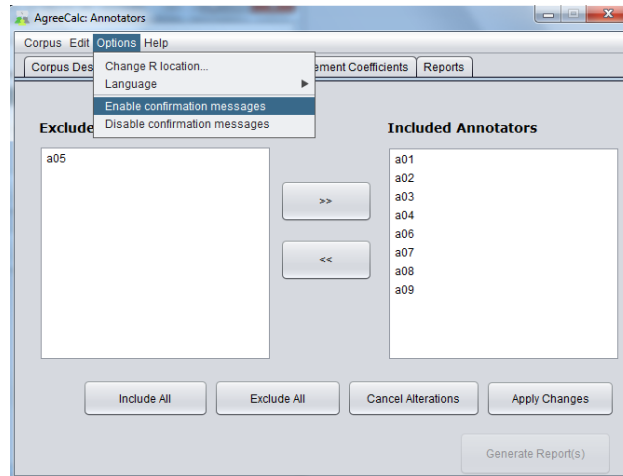
Figure 17: Enable confirmation dialogs option.

3.4 Help Menu

From the "Help" menu, the user can get information about AgreeCalc and also open the user manual.

3.4.1 Informations about AgreeCalc

To obtain information about the program, simply click on the "About" option in the "Help" menu that a presentation dialog will be displayed (Figure 18).

Figure 18: Informations dialog.

3.4.2 Open the user manual

To open the user manual, the user must access the "Help" menu and click on "Manual...", which will cause the manual to open in the system's standard PDF reader (Figures 19 and 20).
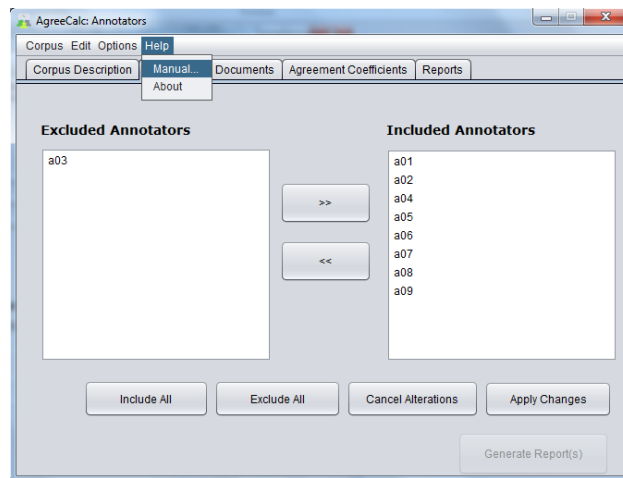

Figure 19: Open manual option location.

Figure 20: Open manual.

3.5 Corpus description tab

This tab presents information about the subset of the corpus under analysis. Initially, AgreeCalc considers all annotators and units found for generating reports. But users can configure subsets of annotators and documents they wish to consider, and in doing so, they can also check the changes on this tab (Figure 21).
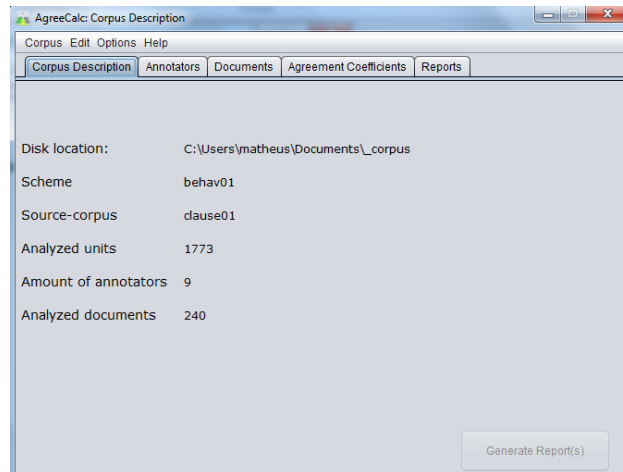
Figure 21: Corpus description tab

3.6 Annotators tab

In this tab, the user can configure the subset of annotators that will be included in the analysis for generating reports (Figure 22). To do this, the user must manipulate the displayed lists using the functions that will be explained next.
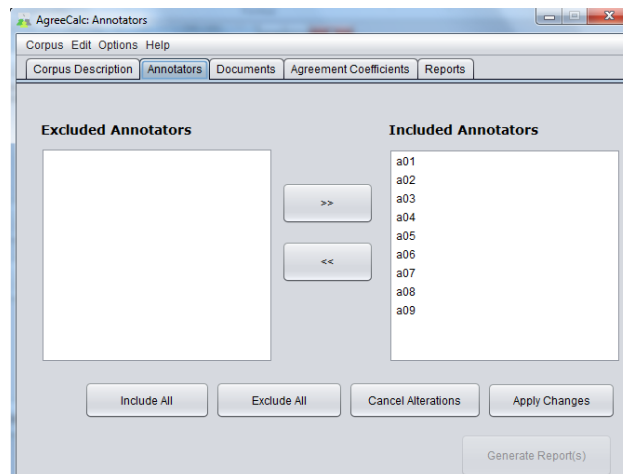

Figure 22: Annotators tab.

Most manipulation functions can be undone and redone. As explained in the 3.2.1 section, AgreeCalc saves a history of the last 10 changes made. This history, however, is cleared when the user uses the "Cancel Alterations" or "Apply Changes" function, which will also be explained later.

3.6.1 Exclude Annotators

There are two ways to exclude annotators from the analysis: using the "<<" button or the "Exclude All" button. The first option provides control over which annotators are moved to the excluded list and, in order to be used, requires the user to select the desired annotators in the "Included Annotators" list.

The selection can be made in one annotator, or it can also be multiple, by using "CTRL + CLICKs" in the desired annotators (Figure 23).
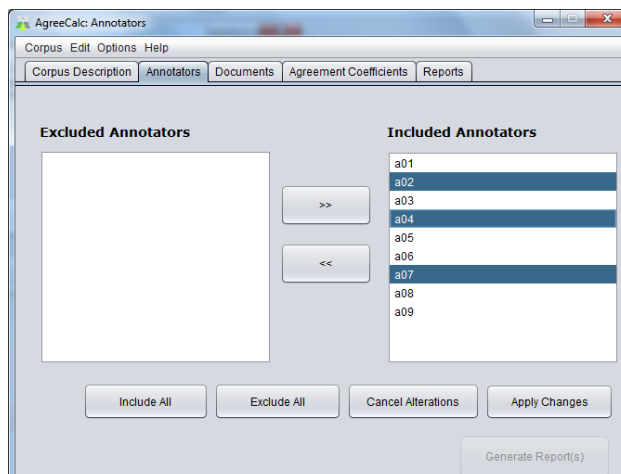

Figure 23: Manual annotator selection.

When the user wants to move the annotators, simply click the "<<" button, which will cause the selected annotators to move to the "Excluded Annotators" list (Figure 24).

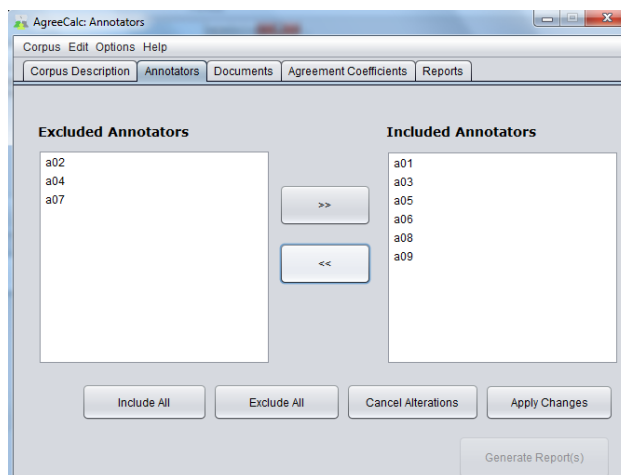
Figure 24: Exclusion result.

The second method, which uses the "Exclude All" button, moves all annotators from the "Included Annotators" list to the "Excluded Annotators" list, as indicated by the figures 25 and 26.
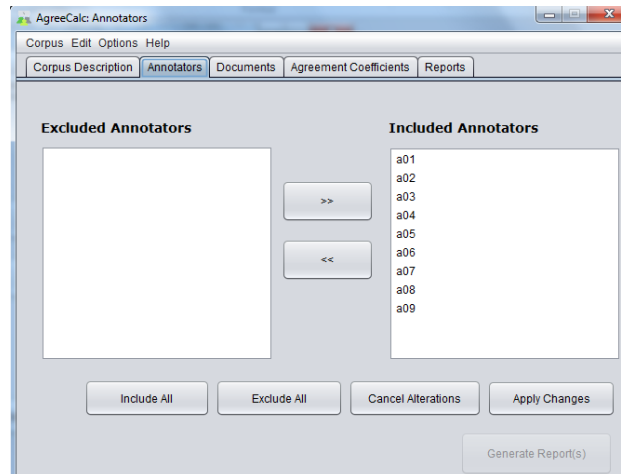
Figure 25: Initial state.
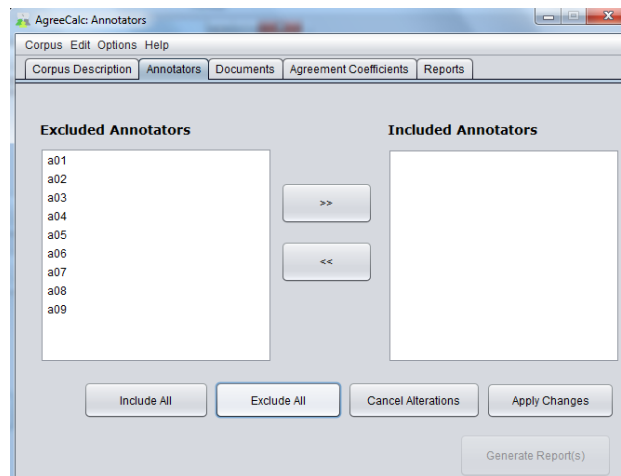
Figure 26: Exclusion result.

3.6.2 Include Annotators

In a similar manner as the annotator exclusion functions, there are two ways to include annotators in the analysis: using the ">>" button or the "Include All" button. The first option provides control over which annotators are moved to the included list and, in order to be used, requires the user to select the desired annotators in the "Excluded Annotators" list.

The selection can be made in one annotator, or it can also be multiple, by using "CTRL + CLICKs" in the desired annotators (Figure 27).

Figure 27: Manual annotator selection.

When the user wants to move the annotators, simply click the ">>" button, which will cause the selected annotators to move to the "Included Annotators" list (Figure 28).

Figure 28: Inclusion result.

The second method, which uses the "Include All" button, moves all annotators from the "Excluded Annotators" list to the "Included Annotators" list, as indicated by the figures 29 and 30.
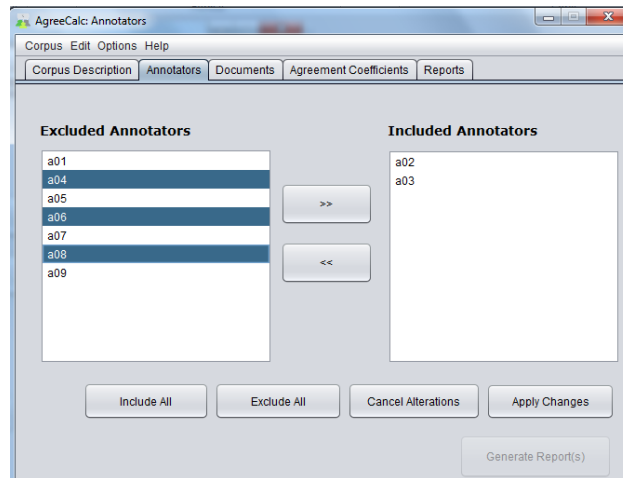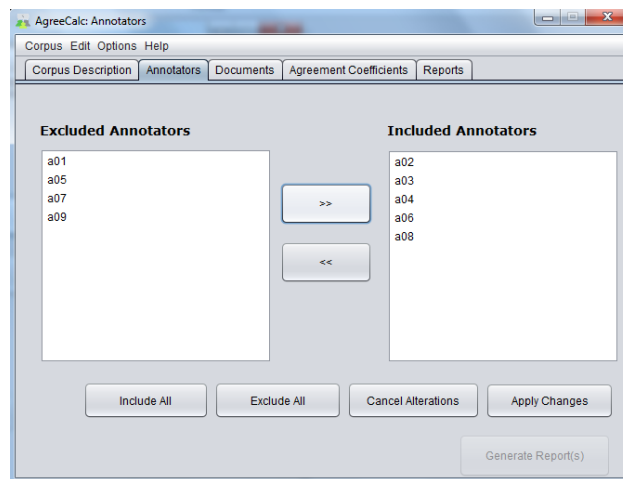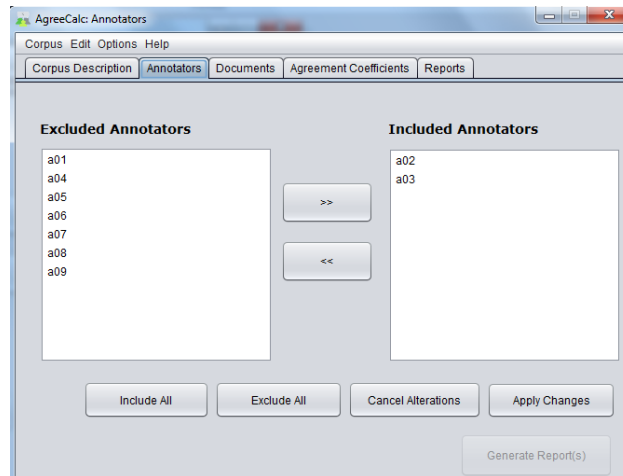
Figure 29: Initial state.

Figure 30: Inclusion result.
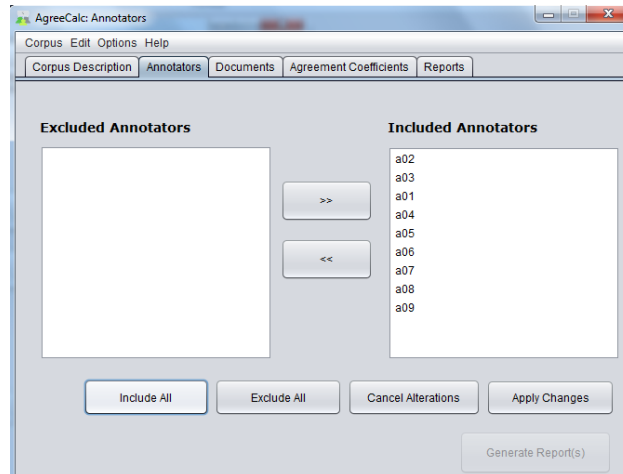
3.6.3 Apply Changes

It is important to note that for changes to the lists to be considered in the analysis, the user needs to click on the "Apply Changes" button, which will reprocess the entries according to the desired subset of annotators.

This process can not be interrupted, and for this reason AgreeCalc displays a confirmation dialog before performing the action (Figure 31).
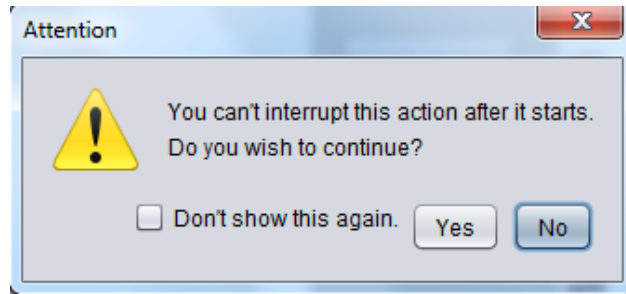
16

Figure 31: Confirmation dialog.

Just like the other confirmation dialogs, this one has the option of not being displayed again, just check the checkbox before replying that it will not be displayed in the next executions. To re-enable the confirmation dialogs, the user can use the function available in "Options" > "Enable confirmation messages".

The minimum number of annotators included in the analysis is 2. If the user-defined number is less than this, the program prevents the "Apply Changes" function from executing.

After applying the changes, the program will move the user to the Documents tab to continue the analysis configuration. However, at any time, the user can go back to the Annotators tab and modify the lists.

3.6.4   Cancel Alterations

The function of the "Cancel Alterations" button is to return the lists to the state left by the last "Apply Changes", that is, the state that is displayed when the user accesses the Annotators tab. This cancels all changes made to the lists, and also discards the history of the last 10 changes.

3.7   Documents tab

In this tab, the user can configure the subset of documents that will be included in the analysis for generating reports (Figure 32). To do this, the user must manipulate the displayed lists using the functions that will be explained next.
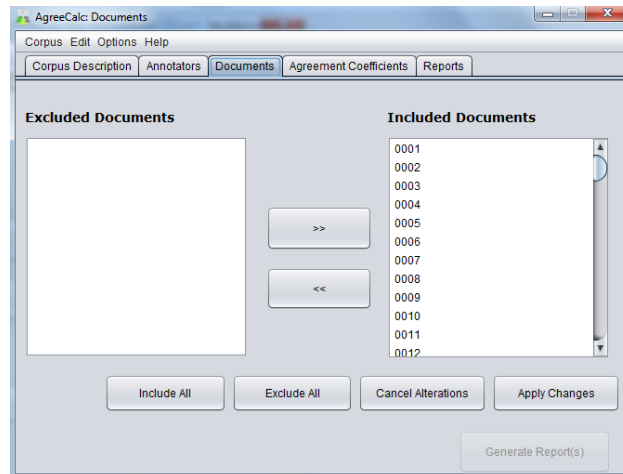
Figure 32: Documents tab.

Most manipulation functions can be undone and redone. As explained in the 3.2.1 section, AgreeCalc saves a history of the last 10 changes made. This history, however, is cleared when the user uses the "Cancel Alterations" or "Apply Changes" function, which will also be explained later.

3.7.1 Exclude Documents

There are two ways to exclude documents from the analysis: using the "<<" button or the "Exclude All" button. The first option provides control over which documents are moved to the excluded list and, in order to be used, requires the user to select the desired documents in the "Included Documents" list.

The selection can be made in one document, or it can also be multiple, by using "CTRL + CLICKs" in the desired documents (Figure 33).
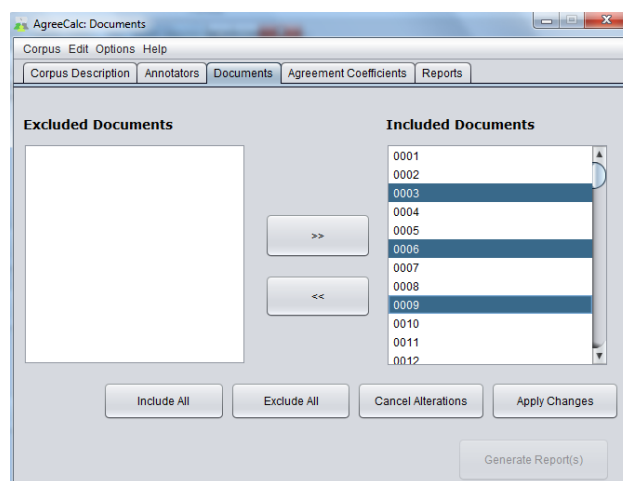

Figure 33: Manual document selection.

When the user wants to move the documents, simply click the "<<" button, which will cause the se-

lected documents to move to the "Excluded Documents" list (Figure 34).
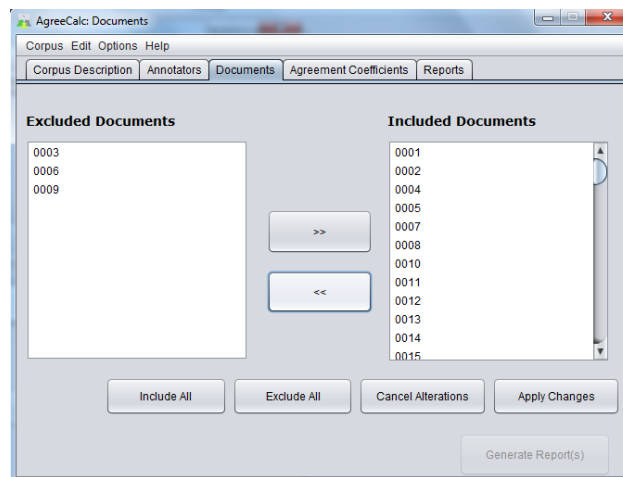

Figure 34: Exclusion result.

The second method, which uses the "Exclude All" button, moves all documents from the "Included Documents" list to the "Excluded Documents" list, as indicated by the figures 35 and 36.
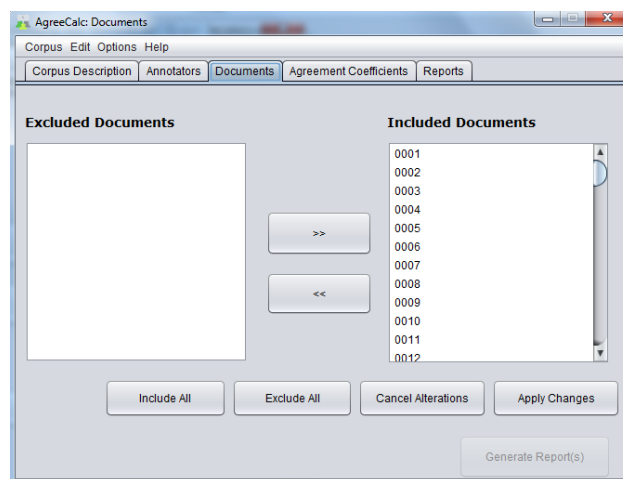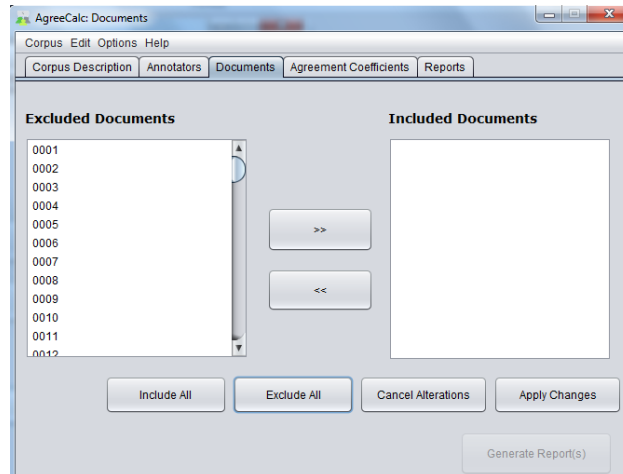

Figure 35: Initial State.

Figure 36: Exclusion result.

3.7.2 Include Documents

In a similar manner as the document exclusion functions, there are two ways to include documents in the analysis: using the ">>" button or the "Include All" button. The first option provides control over which documents are moved to the included list and, in order to be used, requires the user to select the desired documents in the "Excluded Documents" list.

The selection can be made in one document, or it can also be multiple, by using "CTRL + CLICKs" in the desired documents (Figure 37).
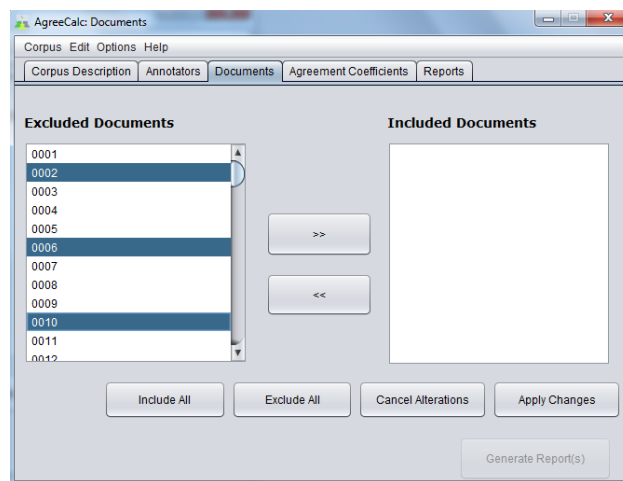
Figure 37: Manual document selection.

When the user wants to move the documents, simply click the ">>" button, which will cause the selected documents to move to the "Included Documents" list (Figure 38).
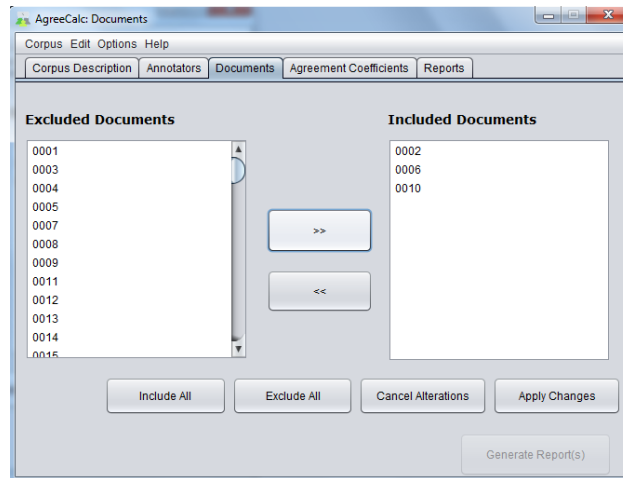
Figure 38: Inclusion result.

The second method, which uses the "Include All" button, moves all documents from the "Excluded Documents" list to the "Included Documents" list, as indicated by the figures 39 and 40.
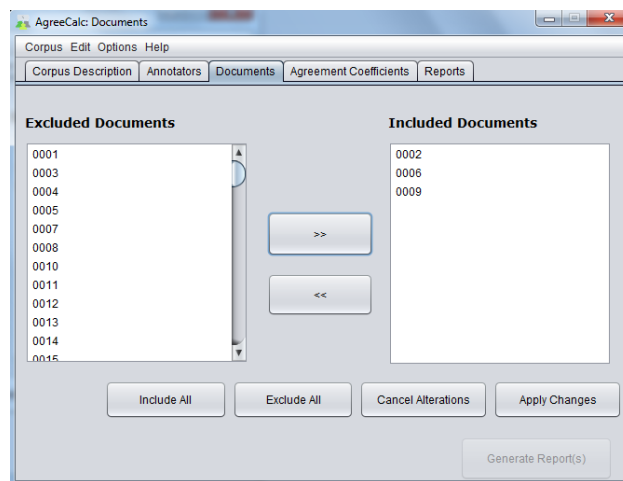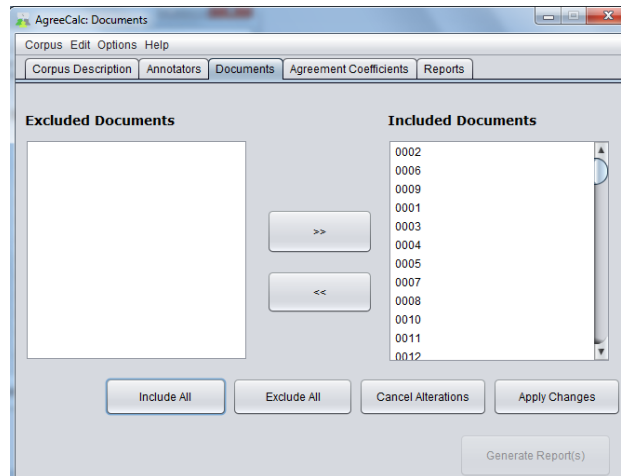

Figure 39: Initial state.

Figure 40: Inclusion result.

3.7.3 Apply Changes

It is important to note that for changes to the lists to be considered in the analysis, the user needs to click on the "Apply Changes" button, which will reprocess the entries according to the desired subset of annotators.

This process can not be interrupted, and for this reason AgreeCalc displays a confirmation dialog before performing the action (Figure 31).

Just like the other confirmation dialogs, this one has the option of not being displayed again, just check the checkbox before replying that it will not be displayed in the next executions. To re-enable the confirmation dialogs, the user can use the function available in "Options" > "Enable confirmation messages".

The minimum number of documents included in the analysis is 1. If the user-defined number is less than this, the program prevents the "Apply Changes" function from executing.

After applying the changes, the program will move the user to the Agreement Coefficients tab to continue the analysis configuration. However, at any time, the user can go back to the Documents tab and modify the lists.

3.7.4 Cancel Alterations

The function of the "Cancel Alterations" button is to return the lists to the state left by the last "Apply Changes", that is, the state that is displayed when the user accesses the Documents tab. This cancels all changes made to the lists, and also discards the history of the last 10 changes.

3.8 Agreement Coefficients tab

In this tab, one can select the agreement coefficients it wants the program to consider when comparing annotations and generating reports. The currently available coefficients are:

- Krippendorf's α: Without restriction on the number of annotators, and correcting the calculations in relation to that expected at random, α ranges from 0 to 1, where 0 indicates the absence of reliability

and 1 perfect agreement (negative values are also possible due to errors of sampling or systematic discordance). In this system, α is used in its nominal version.

- Cohen's κ: Limited to only two annotators, and correcting the calculations against that expected at random, it also ranges from 0 to 1 (with the same interpretation as the Krippendorf's α).

- Fleiss's κ: Cohen's κ generalization for more than two annotators.

- Agreement percentage: The simplest way to determine the agreement between annotators is calculated as the fraction of the classifications in which the annotators agree on the same unit. It suffers, however, for not taking into account the value of the agreement expected at random.

- Robinson's A: There is no restriction on the number of annotators considered. Implemented by irr library based on Robinson (1957).

- Kendall's W: There is no restriction on the number of annotators considered. Implemented by irr library based on Kendall (1948).

In addition, if the user wants, the program allows the calculation of these coefficients considering all combinations of possible annotator pairs within the selected subset. However, because it is a peer-to-peer calculation, using these options can greatly impact the waiting time until reports are created.

To enable the option, simply check the "Enable pairwise coefficient calculation" checkbox and select the coefficients you want to compare, as in Figure 41.
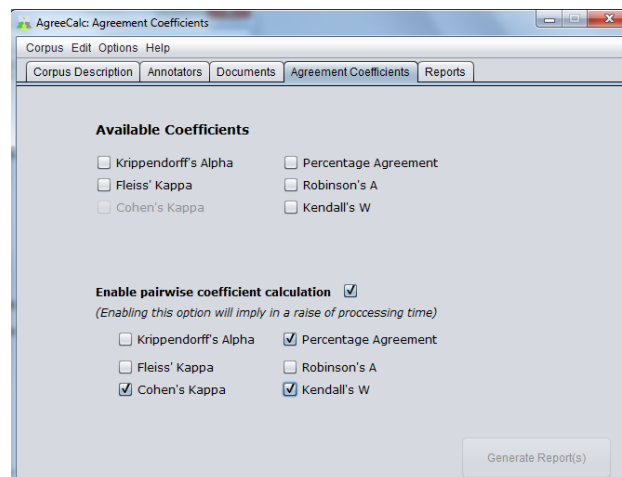

Figure 41: Example setup for pairwise calculation

3.8.1 Missing values

Missing values are encoded as "NA" and are sent to the irr library which, in turn, disregards all "NA" values before performing the calculations.

3.9 Reports tab

Finally, in the Reports tab, the user chooses the format in which the calculated coefficients will be displayed, exporting the document as HTML, XML or PDF (Figure 42). In addition, the user has the possibility to

obtain two extra sets of data, which are nothing more than annotation documents containing, for each unit of the corpus, respectively, the most popular classification among the annotators (mode), that is, the category more frequently associated with each unit, regardless of the minimum number of annotators, or the classification given by its absolute majority (ie above 50%), in case there are units where a majority has not been reached, those remain unannotated. These annotation sets are also coded like the others, according to the standard defined in Roman (2013). Thus, the user not only has the numerical results of the agreement coefficients, but also a gold standard, constructed according to one of these two metrics, which can be used for future research.
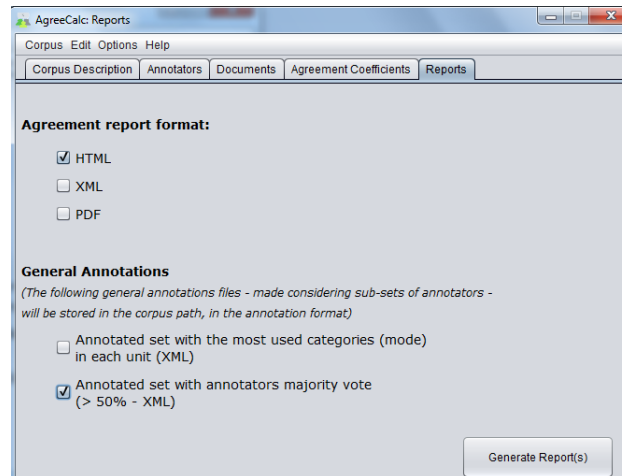

Figure 42: Reports tab.

HTML, XML and PDF reports become available as soon as an agreement coefficient is selected. Because these are the reports which contain the results from the coefficient calculations. The extra data sets, on the other hand, can be generated at any moment (without the need to setup an analysis).

To generate such reports, simply select the ones you want and click on "Generate Report(s)". The program will process the input data (Figure 43) and then create the report files. For HTML, XML and PDF reports, the user must enter the location of the file (Figure 44). For the two extra sets of data, AgreeCalc will create the files within the *corpus*'s folder (Figure 45).
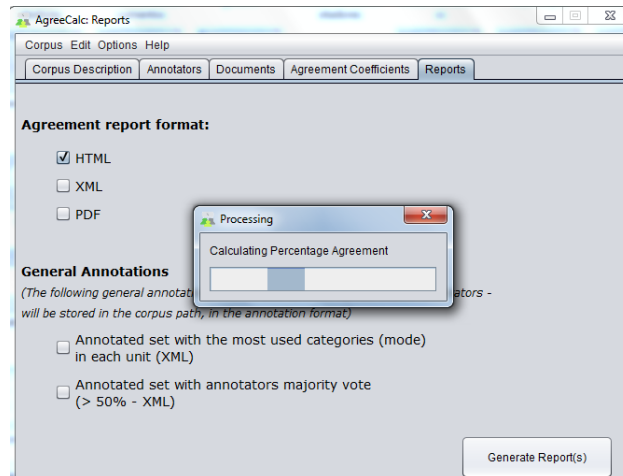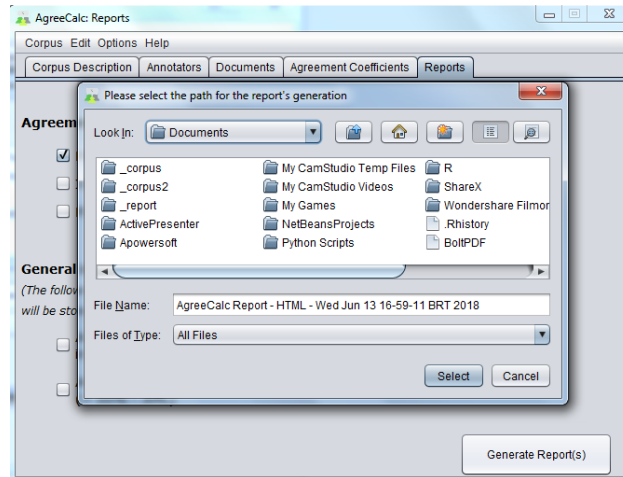
Figure 43: AgreeCalc processing data.
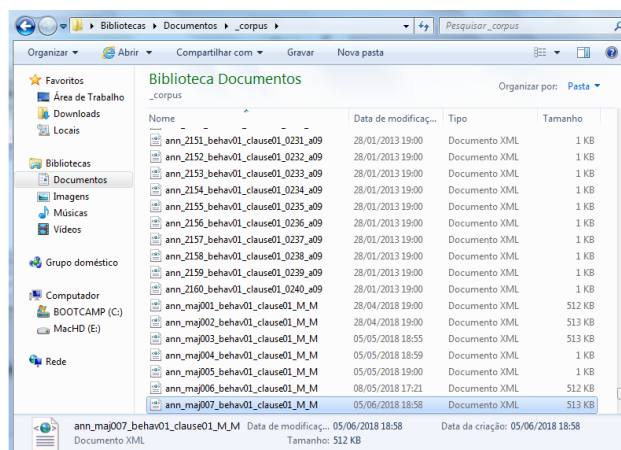

Figure 44: Report file save screen.

Figure 45: Extra data sets file location (corpus's folder).

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