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Data Mapping and Transformation Tool





CHAPTER 12 – DATA MAPPING AND TRANSFORMATION TOOL

he Data Mapping and Transformation (DMT) tool, also known as Extract, Transform, Load (ETL) tool, is a combination of web-based Java application and downloadable tool that can be run on virtually any Java-enabled platform such as Windows, UNIX, or Macintosh OS X. The DMT/ETL tool (available via the BRICS website), runs locally as a Java Web Start application on a user's computer (requires the Java runtime environment). The tool supports data definition, data

mapping, data transformation, and data access through the research cycle.

To ensure the quality of data being uploaded, the collected data must comply with the defined values and standarization found within the Data Dictionary.

Using the DMT/ETL standard user-interface and analysis tools, researchers can easily load their Data Elements (DEs) and Permissible Values (PVs) in the form of a data dictionary to be paired with (or mapped to) eligible BRICS elements and their values within the BRICS Data Dictionary, thereby decreasing the time and effort required to input data to the BRICS system. After pairing or mapping, the DMT/ETL tool can accept the data (in the form of a **CSV file**) from a researcher and swaps their variable names and associated permissible values with variable names and values that are compliant with the BRICS Data Dictioary. The resulting file is now properly formatted for the validation tool, and if successfully validated, can be submitted with the submission tool.

The DMT/ETL tool comprises a set of tools that includes:

- ✤ Mapping Tool creates a map file that allow users to map their variables, variable datatypes and permissible values (PVs) to the corresponding data elements and values from the BRICS Data Dictionary.
- * Transform Tool uses the map file to transform the user data file into BRICS format.

See Figure 1 for an overview of the DMT/ETL process.



Figure 1. Data Mapping and Transformation (DMT) Tool – The DMT tool comprises mapping and transformation tools. The first step, mapping, involves manually mapping your source data dictionary to the data elements in a BRICS form structure. This mapping can be saved and reloaded for future reuse. The last step, transformation, involves applying the mapping file(s) to your source data file(s) for conversion to BRICS-ready csv file(s). Transformations can be saved and reloaded for future reuse.



12.1 System Requirements

The DMT/ETL tool is a JAVA application JAR (Java Archive) file that can be downloaded from the <u>BRICS website</u> and runs locally on your machine. **Note** that the most recent version of <u>Java</u> <u>Runtime Environment (JRE)</u> (8 or higher) is required to run the tool. Make sure your computer has it installed.

Module Input:

- ✤ A form structure, to which data elements the source data should be mapped, it can obtain from the BRICS instance
- A source data dictionary file (CSV) with data element definitions and permissible values (PVs)
- CSV files with clinical data, which are planned to map to the BRICS form structures and data elements

Module Output:

- CSV files with clinical data transformed into BRICS format and ready for upload
- The map file (TXT) which maps your data dictionary variables to BRICS variables. This map file should be saved and can be used and re-used for multiple data uploads
- An error log with validation errors and warnings (if any)

12.1.1 Before starting using the DMT/ETL tool

Make sure that you have the following information ready:

- 1. The BRICS instance you are submitting data to.
- 2. Your data dictionary (even very rudimentary), which defines your variables for a given dataset, is formatted as required by the DMT/ETL tool. Refer to **Figure 2** for more information.
- 3. The data file (CSV) your plan to map to BRICS FS/DEs is prepared and has the following information: the form structure short name is entered in the cell A1



Name	Туре	PVs	PV Description (Optional)	Title (Optional)
GUID	GUID			
NumbScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Numbness scale
FeelHotScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Feeling hot scale
WobblinessScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Wobbliness scale
UnableToRelaxScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Unable to relax scale
FearWorstScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Fear of the worst scale
DizzyScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Dizzy scale
HeartPoundScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Heart pounding/racing scale
UnsteadyScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Unsteady scale
TerrifiedScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Terrified or afraid scale
NervousScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Feeling nervous scale
ChokingScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Choking scale
HandsTremblingScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Hands trembling scale
ShakyScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Feeling shaky scale
FearLosingCntrlScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Fear of losing control scale
DiffcltyBreathingScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Difficulty breathing scale
FearDyingScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Fear of dying scale
ScaredScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Feeling scared scale
IndigestionScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Indigestion scale
FaintScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Feeling faint/lightheaded scale
FaceFlushedScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Face flushed scale
HotColdSweatsScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Hot/cold sweats scale
BAITotalScore	Numeric			BAI Total Score
BAITotalScoreInterpretT	Alphanumeric	Low anxi	ety:Moderate anxiety:Persistent and high	n anxiety

Figure 2. Source DE file – a data dictionary which defines your variables, so the DMT/ETL tool knows which variable to map to BRICS DEs. Please note **the following columns are required by the DMT/ETL tool**: Name – contains variable names, Type – contains data type information, PVs – contains permissible values. The following columns are optional PV Description and Title, but it would be helpful if you keep these columns too. **The list of datatypes** is as follows: Alphanumeric – should be used for alpha data, free text, etc., Boolean – use for True/False values, GUID – use only for GUID, Numeric – use for numeric values.

12.1.2 Preparing the source data file

Before mapping your data onto BRICS variables, make sure that your data file is prepared. The preparation inclused the following steps (**Figure 3**):

- 1. Make sure that the form struttre short name is in A1 cell
- 2. Make sure you add the GUID column and GUIDs to all records
- 3. Make sure that all variables which are included in your data file (**Figure 3**) are also described in your data dictionary the Source DE file (**Figure 2**)



GUIDs are added to each row of data

Figure 3. Preparing the source data file

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6 • BRICS USER MANUAL
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Launching/Running the Data Mapping and Transmission Tool

The DMT/ETL tool is available via the <u>BRICS website</u>. For steps downloading the CSV template, refer to the <u>Data Dictionary</u> module.

To submit imaging data to the BRICS repository, you are required to run a Java Web Start application, to properly prepare your data for Validation and Upload. Please refer to documentation on the MIPAV Imaging Tool for more information.

To launch the Data Mapping and Transmission tool: perform the following actions:

- 1. Navigate to BRICS web site (https://brics.cit.nih.gov/intro)
- 2. Press Launch Data Mapping Tool



Data Mapping Tool

The Data Dictionary provides functionality for creating, managing, and searching data dictionary components (data elements and form structures), as well as services for validating research data against the standardized common data elements (CDEs).

Launch Mapping Tool



Data Dictionary: Define And Validate Data

The Data Dictionary provides functionality for creating, managing, and searching data dictionary components (data elements and form structures), as well as services for validating research data against the standardized common data elements (CDEs).



Data Repository: Study Management,⁹ Data Validation And Submission 9

The Data Repository is the central hub of the BRICS system, providing functionality for defining and managing study information, and for contributing, uploading, and storing the research data associated with each study.

- **3.** Click the Launch Data Mapping and Transmission Tool button to start the application verification process.
- 4. Once the application completes the verification process, the Java Web Start Launcher opens.
- 5. Click the Run button to run the DMT/ETL application on your computer.
- 6. To continue, you **MUST** read and accept the warning banner by Clicking on the **Yes** button. Click the **No** button to exit the application.



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- 7. The Data Mapping and Transformation Tools opens.
- 8. In the Tool Configuration Startup window, select the BRICS instance you plan to submit your data and press **OK**.

Tool Con	figuration Startup	\times
?	Please choose which service you want to connect	t to.
	OK Cancel	

9. In the DMT/ETL tool window, which appears, press **Get Form Structures** tab. The tool will access the data dictionary of the BRICS instance you specified in the previous step (e.g. FITBIR) and will get the list of form structures from that data dictionary.

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Help											
Currently Connected	l to:https://fitbir.nih.gov/										
Mapping Tool T	ransform Tool										
	Get Form Structures			Select Form Structure				Load Source DEs			
Reference Form St	ucture:										
Group	Element Name	Title	Туре	Reference PVs	Required	Source N	Source Type	Source PVs	PV Map	pings	

Pay attention to

- The Currently Connected to string at the top of the DMT/ETL tool. It provides you with information on the BRICS instance you conec ted to.
- The Output log window (at the bottom). It provides you with a log of what the DMT/ETL tool does and with error messages if any.



apping Tool Transform Tool					,					
Get Form Struct	ures	Select Form	Structure			L	oad Sour	urce DEs		
ference Form Structure: Group Element Name	🔬 Choose Form Structure	e					×	PVs	PV Mappings	
		BAI	Search	Reset						
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	BAI	Beck Anxiety Inventory (BAI)			1.4 PUBLI	SHED				

10. In the Choose Form Structure window, enter the name of the form structure you plan to map your data to e.g., BAI for Beck Anxiety Inventory (BAI) data. Press **Search**.

Mapping Tool	Transform Tool										
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		ABASD mod FU CHAI	Adaptive Behavior Assessment System II	(ABAS II) Teacher/I	Daycare Pr	1.0	PUBLISHED				
		ABASIII	Adaptive Behavior Assessment System III	(ABAS III)		1.0	AWAITING_PUBLICATION				
		ABASP_mod_BL_CHAI	Adaptive Behavior Assessment System II	(ABAS II) Parent Fo	rm - mod	1.0	PUBLISHED				
		ABASP_mod_FU_CHAI	Adaptive Behavior Assessment System II	(ABAS II) Parent Fo	orm - mod f	1.0	PUBLISHED				
		ABCScale_FITBIR	Activities Specific Balance Confidence Sc	ale (ABC-Scale)		1.2	PUBLISHED				
		ACE	Acute Concussion Evaluation (ACE) Phys	cial/Clinician Office	e Version	1.0	PUBLISHED				
		ACE_Appdx_0000350	Acute Concussion Evaluation (ACE) Phys	cial/Clinician Office	e Version (1.0	PUBLISHED				
		AckermanDST	Ackerman Digit Symbol Test			1.0	AWAITING_PUBLICATION				
		ACT	Auditory Consonant Trigrams			1.0	PUBLISHED				
		ActivityLevelsTBI	Activity Levels After Concussion			1.0	AWAITING_PUBLICATION				
		AcuteAssessmt	Acute Assessments			1.0	PUBLISHED				
		ADAPT_DEVHX	ADAPT: Developmental and Health Histor	y Form (DEVHX)		1.0	PUBLISHED				
		ADAPT_MEDIC	ADAPT ICU Stay Medications MEDIC			1.0	PUBLISHED				
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Output log											
This Tool has succ	cessfully connected and config	ured to https://fitbir.nih.gov/.									

- 11. The list of form structures appears. Use the mouse to select the form structure you need (e.g. Beck Anxiety Inventory (BAI) and press **Select**. Then press **OK** in the Message window.
- 12. The DMT/ETL tool retrieves the list of data elements and groups from the BAI for Beck Anxiety Inventory (BAI) from structure short name BAI. Review that list. Note that the GUID is a required data element (in red), so it <u>must be mapped</u> to the corresponding variable in your data dictionary.

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Group	Element Name	Title	Туре	Reference PVs	Required	Source N	Source Type	Source P	PV Mappings	
Main Group	GUID	GUID	GUID		REQUIRED					-
Main Group	SubjectIDNum	Subject identifier number	ALPHANUMERIC		RECOMMENDED					
Main Group	AgeYrs	Age in years	NUMERIC		RECOMMENDED					
Main Group	VitStatus	Vital status	ALPHANUMERIC	Alive;Dead;Unknown	OPTIONAL					
Main Group	VisitDate	Visit date	DATE		RECOMMENDED					
Main Group	SiteName	Site name	ALPHANUMERIC		RECOMMENDED					-
Main Group	DaysSinceBaseline	Days since baseline	NUMERIC		RECOMMENDED					
Main Group	CaseContrilind	Case control indicator	ALPHANUMERIC	Case;Control;Unknown	RECOMMENDED					
Main Group	GeneralNotesTxt	General notes text	ALPHANUMERIC		RECOMMENDED					
Form Administration	ContextType	Context type	ALPHANUMERIC	After injury;At time of assess	OPTIONAL					
Form Administration	ContextTypeOTH	Context type other text	ALPHANUMERIC		OPTIONAL					
Form Administration	DataSource	Data source	ALPHANUMERIC	Brother; Chart/Medical record	OPTIONAL					
Form Administration	DataSourceOTH	Data source other text	ALPHANUMERIC		OPTIONAL					
BAI	BAINumbScale	Beck Anxiety Inventory (BAI) - Numbn	NUMERIC	0;1;2;3	RECOMMENDED					
BAI	BAIFeelHotScale	Beck Anxiety Inventory (BAI) - Feeling	NUMERIC	0;1;2;3	RECOMMENDED					
BAI	BAIWobblinessScale	Beck Anxiety Inventory (BAI) - Wobblin	NUMERIC	0;1;2;3	RECOMMENDED					
BAI	BAIUnableToRelax	Beck Anxiety Inventory (BAI) - Unable t.	NUMERIC	0:1:2:3	RECOMMENDED					
BAI	BAIFearWorstScale	Beck Anxiety Inventory (BAI) - Fear of t.	NUMERIC	0:1:2:3	RECOMMENDED					
BAI	BAIDizzvScale	Beck Anxiety Inventory (BAI) - Dizzy sc	NUMERIC	0:1:2:3	RECOMMENDED					-
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12.2 USING THE MAPPING TOOL

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So far, you managed to retrieve a form structure from the BRICS data dictionary, now you need to map your variables to BRICS data elements from that form structure.

12.2.1 Pairing source variables to BRICS variables of the selected form structure

To map your variables to BRICS data elements from a selected form structure: Perform the following actions:

1. In the **Mapping Tool** tab, click to **Load Source DEs** button. In the Choose Source Data Elements CSV file window that appears, navigate to the directory where you store your data dictionary (a source data elemnts file (CSV), refer to Figure 1). Select the file (a CSV) and press **Open**.

	А	В	С	D	E
1	Name	Туре	PVs	PV Description (Optional)	Title (Optional)
2	GUID	GUID			
3	NumbScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Numbness scale
4	FeelHotScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Feeling hot scale
5	WobblinessScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Wobbliness scale
6	UnableToRelaxScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Unable to relax scale
7	FearWorstScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Fear of the worst scale
8	DizzyScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Dizzy scale
9	HeartPoundScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Heart pounding/racing scale
10	UnsteadyScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Unsteady scale
11	TerrifiedScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Terrified or afraid scale
12	NervousScale	Numeric	0;1;2;3	Not at all;Mildly;Moderately;Severe	BAI Feeling nervous scale
	BAI sour	ce DEs	+		

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Main Group	SiteName	Site name	BAI te	st data ETL.csv								
Main Group	DavsSinceBaseline	Davs since baseline										
Main Group	CaseContrilnd	Case control indicator										
Main Group	GeneralNotesTxt	General notes text										
Form Administration	ContextType	Context type										
Form Administration	ContextTypeOTH	Context type other text										
Form Administration	DataSource	Data source										
Form Administration	DataSourceOTH	Data source other text										
BAI	BAINumbScale	Beck Anxiety Inventory (BAI										
BAI	BAIFeelHotScale	Beck Anxiety Inventory (BAI	Eilo Name	PAL COUTON	DEc.cev							
BAI	BAIWobblinessScale	Beck Anxiety Inventory (BAI	The Manie	. Dhisource	DES.CSV							
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BAI	BAIDizzvScale	Beck Anxiety Inventory (BAI					_					-
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2. The Load Source DEs button brings up the Source Data Elements dialog populated with the variable names, and other variable attributes from your data dictionary file – Source DE file. If this file is in the correct format, a dialog window with the user's DEs and PVs will load as shown below.

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Help	_	Source Data Elements					^		
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Group	Element		GUID	GUID	0-1-0-0	Not at all Mildly Medarate		PV Mappings	
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Main Group	SubjectIDN		Webbliness Scale	Numeric	0.1.2.3	Not at all Mildly Moderate			
Main Group	AgeYrs		LipphaToDalayScale	Numeric	0,1,2,3	Not at all Mildly Moderate			
Main Group	VitStatus		Eoort/VorctScolo	Numeric	0.1.2.2	Not at all Mildly Moderate			
Main Group	VisitDate		DizzyScala	Numeric	0.1.2.3	Not at all:Mildly:Moderate			
Main Group	SiteName		HeartPoundScale	Numeric	0.1.2.3	Not at all Mildly Moderate			=
Main Group	DaysSince		LinsteadyScale	Numeric	0,1,2,3	Not at all Mildly Moderate			
Main Group	CaseContrl		TerrifiedScale	Numeric	0:1:2:3	Not at all:Mildly.Moderate			
Main Group	GeneralNot		NenousScale	Numeric	0.1.2.3	Not at all:Mildly:Moderate			
Form Administration	ContextType		ChokingScale	Numeric	0:1:2:3	Not at all Mildly Moderate			
Form Administration	ContextType		HandsTremblingScale	Numeric	0.1.2.3	Not at all:Mildly:Moderate			
Form Administration	DataSource		ShakyScale	Numeric	0:1:2:3	Not at all Mildly Moderate			
Form Administration	DataSource		Fearl osingCotrIScale	Numeric	0.1.2.3	Not at all:Mildly:Moderate			
BAI	BAINumbSo		DiffcltyBreathingScale	Numeric	0.1.2.3	Not at all:Mildly:Moderate			_
BAI	BAIFeelHot		FearDyingScale	Numeric	0:1:2:3	Not at all:Mildly:Moderate			
BAI	BAIWobblin		ScaredScale	Numeric	0.1.2.3	Not at all Mildly Moderate			
BAI	BAIUnableT		IndigestionScale	Numeric	0:1:2:3	Not at all:Mildly:Moderate			
BAI	BAIFearWor		FaintScale	Numeric	0:1:2:3	Not at all:Mildly:Moderate			
BAI	BAIDizzvSca		FaceFlushedScale	Numeric	0:1:2:3	Not at all:Mildly:Moderate			_
			HotColdSweatsScale	Numeric	0:1:2:3	Not at all;Mildly;Moderate			
			BAITotalScore	Numeric					
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This Tool has successful	ally connected								
Successful retrieval of f	orm structures								
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Note that the **Search** textbox in the top bar allows you search for a particular DE or PV (partial search).

Now you will need to use both windows of the DMT/ETL tool - the Main window and the Source Data Elements window.

3. In the Source Data Elements window, select the first data element, e.g. GUID and then select GUID in Main window. Press **Pair**. The word "Yes" appears (in red) in the Source Data Elements Window Mapped column next to the variable name. That means these two variables were paired successfully.

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Mapping Tool Tra	insform Tool										
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Main Group	DavsSinceBaseline	Days since baseline	NUMERIC		Source Data Ele	ments					
Main Group	CaseContrilnd	Case control indicator	AL PHANUMERIC	Case:Control:Unkno	Mapped	Name	Type 🔺	PVs	PV Des	criptions	Title
Main Group	GeneralNotesTyt	General notes text	AL PHANLIMERIC			BAITotalScoreInterpret	tTyp Alphanumer	ic Low anxiety:Moderat.			
Form Administration	ContextType	Context type	AL PHANUMERIC	After injury At time of		GUID	GUID				
Form Administration	ContextTypeOTH	Context type other text	AL PHANUMERIC			NumbScale	Numeric	0:1:2:3	Not at all;Mildly;Mo	derately.Severe	BAI Numbness scale
Form Administration	DataSource	Data source	AL PHANLIMERIC	Brother Chart/Medic		FeelHotScale	Numeric	0:1:2:3	Not at all:Mildly:Mo	derately:Severe	BAI Feeling hot scale
Form Administration	DataSourceOTH	Data source other text	AL PHANUMERIC	broard, orranging and		WobblinessScale	Numeric	0:1:2:3	Not at all:Mildly:Mo	derately.Severe	BAI Wobbliness scale
BAI	BAINumbScale	Beck Anxiety Inventory (BAI) - Numbri	NUMERIC	0.1.2.3		UnableToRelaxScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately,Severe	BAI Unable to relax scale
BAI	BAIFeelHotScale	Beck Anxiety Inventory (BAI) - Feeling	NUMERIC	0:1:2:3		FearWorstScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately,Severe	BAI Fear of the worst scale
BAI	BAlWobblinessScale	Beck Anxiety Inventory (BAI) - Wobblin.	NUMERIC	0:1:2:3		DizzyScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Dizzy scale
BAI	BAIUnableToRelax	Beck Anxiety Inventory (BAI) - Unable t.	NUMERIC	0:1:2:3		HeartPoundScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately,Severe	BAI Heart pounding/racing scale
BAI	BAIFearWorstScale	Beck Anxiety Inventory (BAI) - Fear of t.	NUMERIC	0:1:2:3		UnsteadyScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately.Severe	BAI Unsteady scale
BAI	BAIDizzyScale	Beck Anxiety Inventory (BAI) - Dizzy sc.,	NUMERIC	0:1:2:3		TerrifiedScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Terrified or afraid scale
						NervousScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Feeling nervous scale
		Output Directory for mapping resi	ult files:			ChokingScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Choking scale
						HandsTremblingScale	e Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Hands trembling scale
Output log						ShakyScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Feeling shaky scale
This Tool has successful	lby connected and config	ared to https://fithir nih gov/				FearLosingCntrlScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Fear of losing control scale
Successful ratriaval of fo	um structuras from Prod	anvironmant				DiffcityBreathingScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Difficulty breathing scale
Successful retrieval of fo	ann structures from Prod	anvironmant				FearDyingScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately,Severe	BAI Fear of dying scale
Successful retrieval of to	and structures nom riod	environment.				ScaredScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Feeling scared scale
Successiul retrieval of da	ata elements for form stri	Refute, BAI				IndigestionScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately,Severe	BAI Indigestion scale
						FaintScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Feeling faint/lightheaded scale
						FaceFlushedScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Face flushed scale
						HotColdSweatsScale	Numeric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Hot/cold sweats scale
						BAITotalScore	Numeric				BAI Total Score
							Pair	Pair: Append	Clear	Close	

- 4. To start mapping your source data dictionary variables to BRICS variables:
 - a. In the Source Data Elements window, select the first variable GUID and select GUID in the Main ELT tool windos. Press **Pair** in Source Data Elements window.
 - b. Then the Source Data Elements window select the second variable, e.g. NumbScale and then select BAI NumbScale in Main window under BAI group. Press Pair. The word "Yes" appears (in red) in the Source Data Elements Window Mapped column next to the NumbScale variable name. That means these two variables were mapped successfully.
- **5.** Repeat step 4 until you map all variables from your Source Data elements window to BRICS variables from the Main DMT/ETL tool window under the Mapping tool tab. Pess **Close** when done.

BRICS

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urrently Connected	to:https://fitbir.nih.gov	1										
Mapping Tool Tra	ansform Tool											
	Get Form Struc	tures		Selec	t Form Structure				Load Source	DEs		
Reference Form Str	acture: BAI						-					
Group	Element Name	Title	Type	1 3	Reference PVs	Required	Source N	Source	Type Source P	PV Mannings		
Main Group	GUID	GUID	GUID			REQUIRED	GUID	GUID	1700 000001 11	i i moppingo		
Main Group	Subject/DNum	Subject identifier number	ALPHANUMERIC			RECOMMENDED						
Main Group	AgeYrs	Age in years	NUMERIC			RECOMMENDED						
Main Group	VitStatus	Vital status	ALPHANUMERIC	Alive;Dea	ad;Unknown	OPTIONAL						
Main Group	VisitDate	Visit date	DATE			RECOMMENDED						
Main Group	SiteName	Site name	ALPHANUMERIC			RECOMMENDED					-	
Main Group	DaysSinceBaseline	Days since baseline	NUMERIC			RECOMMENDED						
Main Group	CaseContrilind	Case control indicator	ALPHANUMERIC	Case;Co	introl;Unknown	RECOMMENDED						
Main Group	GeneralNotesTxt	General notes text	ALPHANUMERIC			RECOMMENDED						
Form Administration	ContextType	Context type	ALPHANUMERIC	After inju	ry;At time of assess	OPTIONAL						
Form Administration	ContextTypeOTH	Context type other text	ALPHANUMERIC			OPTIONAL						
Form Administration	DataSource	Data source	ALPHANUMERIC	Brother;0	Chart/Medical record.	OPTIONAL						
Form Administration	DataSourceOTH	Data source other text	ALPHANUMERIC		Company Press							
BAI	BAINumbScale	Beck Anxiety Inventory (BAI) - Numbn	NUMERIC	0;1;2;3	Source Data Eler	ments						
BAI	BAIFeelHotScale	Beck Anxiety Inventory (BAI) - Feeling	NUMERIC	0,1,2,3		-				1	1	
BAI	BAlWobblinessScale	Beck Anxiety Inventory (BAI) - Wobblin	NUMERIC	0;1;2;3						Search		Reset
BAI	BAIUnableToRelax	Beck Anxiety Inventory (BAI) - Unable t.	NUMERIC	0;1;2;3								
BAI	BAIFearWorstScale	Beck Anxiety Inventory (BAI) - Fear of t	NUMERIC	0;1;2;3	Source Data Elem	ents						
BAI	BAIDizzvScale	Beck Anxiety Inventory (BAI) - Dizzy sc	NUMERIC	0.1.2.3	Mannad	Nama		Tune	D\/e	PV Deer	rintione	Title
					Ves	RaiTotalScoreintern	nefTyn Aln	hanumeric	t ro	TV Dest	anpaorio	The
		Output Directory for mapping resu	ilt files:		Yes	GUID	GU	ID	con univery, moderate.			
Output log					Yes	NumbScale	Nu	meric	0:1:2:3	Not at all:Mildly:Mo	derately:Severe	BAI Numbness scale
Output tog					Yes	FeelHotScale	Nu	meric	0:1:2:3	Not at all:Mildly:Mo	derately.Severe	BAI Feeling hot scale
This Tool has successfu	illy connected and config	ared to https://fitbir.nih.gov/.			Yes	WobblinessScale	Nu	meric	0:1:2:3	Not at all;Mildly;Mo	derately:Severe	BAI Wobbliness scale
Successful retrieval of fi	orm structures from Prod	environment.			Yes	UnableToRelaxScal	e Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Unable to relax scale
Successful retrieval of fi	orm structures from Prod	environment.			Yes	FearWorstScale	Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Fear of the worst scale
Successful retrieval of d	ata elements for form str	actore: BAI			Yes	DizzyScale	Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Dizzy scale
All required data element	its have been mapped - m	apping file can now be saved			Yes	HeartPoundScale	Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Heart pounding/racing scale
					Yes	UnsteadyScale	Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Unsteady scale
					Yes	TerrifiedScale	Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately,Severe	BAI Terrified or afraid scale
					Yes	NervousScale	Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately.Severe	BAI Feeling nervous scale
					Yes	ChokingScale	Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Choking scale
					Yes	HandsTremblingSca	ale Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Hands trembling scale
					Yes	ShakyScale	Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Feeling shaky scale
								morio	0.1.2.3	Not at all;Mildly;Mo	derately:Severe	BAI Fear of losing control scale
					Yes	FearLosingCntrlSca	le Nu	menc				
					Yes Yes	FearLosingCntrlSca DiffcltyBreathingSca	le Nu le Nu	meric	0;1;2;3	Not at all;Mildly;Mo	derately;Severe	BAI Difficulty breathing scale
					Yes Yes Yes	FearLosingCntrlSca DiffcltyBreathingSca FearDyingScale	le Nu le Nu Nu	meric meric	0;1;2;3 0;1;2;3	Not at all;Mildly;Mo Not at all;Mildly;Mo	derately;Severe derately;Severe	BAI Difficulty breathing scale BAI Fear of dying scale
					Yes Yes Yes Yes	FearLosingCntrlSca DiffcltyBreathingSca FearDyingScale ScaredScale	le Nu le Nu Nu Nu	meric meric meric	0:1:2:3 0:1:2:3 0:1:2:3	Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo	derately;Severe derately;Severe derately;Severe	BAI Difficulty breathing scale BAI Fear of dying scale BAI Feeling scared scale
					Yes Yes Yes Yes Yes	FearLosingCntrlSca DiffcltyBreathingSca FearDyingScale ScaredScale IndigestionScale	le Nu le Nu Nu Nu Nu	meric meric meric meric meric	0;1;2;3 0;1;2;3 0;1;2;3 0;1;2;3 0;1;2;3	Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo	derately,Severe derately,Severe derately,Severe derately,Severe	BAI Difficulty breathing scale BAI Fear of dying scale BAI Feeling scared scale BAI Indigestion scale
					Yes Yes Yes Yes Yes Yes	FearLosingCntrlSca DiffcltyBreathingSca FearDyingScale ScaredScale IndigestionScale FaintScale	le Nu le Nu Nu Nu Nu	meric meric meric meric meric meric	0:1;2;3 0:1;2;3 0:1;2;3 0:1;2;3 0:1;2;3 0:1;2;3	Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo	derately,Severe derately,Severe derately,Severe derately,Severe derately,Severe	BAI Difficulty breathing scale BAI Fear of dying scale BAI Feeling scared scale BAI Indigestion scale BAI Feeling faintlightheaded scale
					Yes Yes Yes Yes Yes Yes Yes Yes Yes	FearLosingCntrlSca DiffcltyBreathingSca FearDyingScale ScaredScale IndigestionScale FaintScale FaceFlushedScale	le Nu le Nu Nu Nu Nu Nu	meric meric meric meric meric meric	0:1;2;3 0:1;2;3 0:1;2;3 0:1;2;3 0:1;2;3 0:1;2;3 0:1;2;3	Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo	derately,Severe derately,Severe derately,Severe derately,Severe derately,Severe derately,Severe	BAI Difficulty breathing scale BAI Fear of dying scale BAI Feeling scared scale BAI Indigestion scale BAI Feeling faint/lightheaded scale BAI Face flushed scale
					Yes	FearLosingCntrlSca DiffcttyBreathingSca FearDyingScale ScaredScale IndigestionScale FaintScale FaceFlushedScale HotColdSweatsScal	le Nu le Nu Nu Nu e Nu	meric meric meric meric meric meric meric	0:1;2;3 0:1;2;3 0:1;2;3 0:1;2;3 0;1;2;3 0;1;2;3 0;1;2;3 0;1;2;3	Not at all;Mildly,Mo Not at all;Mildly,Mo Not at all;Mildly,Mo Not at all;Mildly,Mo Not at all;Mildly,Mo Not at all;Mildly,Mo	derately;Severe derately;Severe derately;Severe derately;Severe derately;Severe derately;Severe derately;Severe	BAI Difficulty breathing scale BAI Fear of dying scale BAI Feeling scared scale BAI feeling faintlightheaded scale BAI Face flushed scale BAI Face flushed scale BAI Face flushed scale
					Yes Yes	FearLosingCntrlSca DiffCtyBreathingSca FearDyingScale ScaredScale IndigestionScale FaintScale FaceFlushedScale HotColdSweatsScal BAITotalScore	le Nu le Nu Nu Nu e Nu Nu	meric meric meric meric meric meric meric meric meric	0.12.3 0.12.3 0.12.3 0.12.3 0.12.3 0.12.3 0.12.3 0.12.3 0.12.3	Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo Not at all;Mildly;Mo	derately, Severe derately, Severe derately, Severe derately, Severe derately, Severe derately, Severe derately, Severe	BAJ Difficulty breathing scale BAI Fear of dying scale BAI Feeling scared scale BAI feeling scared scale BAI Feeling faintlightheaded scale BAI Face flushed scale BAI Hotloold sweats scale BAI Hotloold sweats scale

6. Note: Pay attention to the Output log window messages.

BRICS

12.2.2 Other Source Data elements window helpful options:

- The **Pair: Append** button can be used to map multiple source data elements to a single BRICS reference data element. See section <u>10.2.5</u> for steps on how to utilize pair:append.
- The **Reset** button brings the original table back up. The **Close** button at the bottom will close the entire dialog window.
- The **Clear** button will clear the contents of the selected row in the main dialog table, as well as removing the red Yes that indicates ta value has been mappedfrom the Source DEs window.

12.2.3 Mapping source variables permissible values to BRICS permissible values

- 1. For data elements that have permisbile values (PV's), these values must also be mapped. DEs with PVs are indicated by the "Double Click to Map" instruction placed in the PV Mappings column (the last column in the Mapping Tool window.
- 2. When the PV Mappings column is double clicked, a dialog containing the source PVs and the reference PVs is loaded. This allows you to map each of their PVs (left) to a BRICS PV (right). Note: You may map multiple PVs to a single BRICS PV, as well as map a variable to a blank.
- **3.** When PV mapping for a give data element is complete, click on the **Done** button to save the information in the PV mappings column.

elp strently Connected to:https Mapping Tool Transform Reference Form Structure: Group El ain Group Days ain Group Gene orm Administration Cont orm Administration	rps://fitbir.nih.gov/ rm Tool Get Form e: BAI Element Name vsSinceBaseline	Structures								
rrently Connected to:https Mapping Tool Transform Reference Form Structure: Group Elain Group Days Jain Group Cass Jain Group Gene orm Administration Cont content definition Cont	ps://fitbir.nih.gov/ rm Tool Get Form e: BAI Element Name vsSinceBaseline	Structures								
Mapping Teel Transform Reference Form Structure: Group E ain Group Days ain Group Gene ym Administration Cont ym Administration Cont	Get Form Get Form e: BAI Element Name vsSinceBaseline	Structures								
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Reference Form Structure: Group E ain Group Days ain Group Case ain Group Gene rrm Administration Cont	e: BAI Element Name			Select	Form Structure			i	oad Source DEs	_
Group E in Group Days in Group Case in Group Gene m Administration Cont	Element Name						1			-
ain Group Days ain Group Case in Group Gene rm Administration Cont	vsSinceBaseline	Title	Type	Reference PVs	Required	Source Name	Source Typ	e Source PVs	PV Mappings	
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ain Group Gene rm Administration Cont	seContrilind	Case control indicator	AL PHANUMERIC	Case:Control:Unknown	RECOMMENDED					
rm Administration Cont	neralNotesTxt	General notes text	AL PHANUMERIC	0400,000	RECOMMENDED					
m Administration Cont	ntextType	Context type	ALPHANUMERIC	After injury:At time of assessm	OPTIONAL					
In Administration Cont	ntextTypeOTH	Context type other text	ALPHANUMERIC		OPTIONAL					
rm Administration Data	taSource	Data source	ALPHANUMERIC	Brother:Chart/Medical record:D.	OPTIONAL					
rm Administration Data	taSourceOTH	Data source other text	ALPHANUMERIC		OPTIONAL					
I BAIN	INumbScale	Beck Anxiety Inventory (BAI) - Numbres	NUMERIC	0,1,2,3	RECOMMENDED	NumbScale	Numeric	0,1;2;3	0:0;1:1;2:2;3:3	
I BAIF	IFeelHotScale	Beck Anxiety Inventory (BAI) - Feeling h	NUMERIC	0,1,2,3	RECOMMENDED	FeelHotScale	Numeric	0,1,2,3	Double Click to Map	
I BAIW	WobblinessScale	Beck Anxiety Inventory (BAI) - Wobbline	NUMERIC	0;1;2;3	RECOMMENDED	WobblinessScale	Numeric	Atap Dermissible Values	×	
I BAIU	IUnableToRelaxS	Beck Anxiety Inventory (BAI) - Unable to	NUMERIC	0;1;2;3	RECOMMENDED	UnableToRelaxScale	Numeric	im wap Permissible values	~	
I BAIF	IFearWorstScale	Beck Anxiety Inventory (BAI) - Fear of th	NUMERIC	0;1;2;3	RECOMMENDED	FearWorstScale	Numeric	Man Causes DVs to Pafaras	nee PVe	
I BAID	IDizzyScale	Beck Anxiety Inventory (BAI) - Dizzy scale	NUMERIC	0;1;2;3	RECOMMENDED	DizzyScale	Numeric	Map Source I vs to Kelele.	ine i vs	
I BAIH	IHeartPoundScale	Beck Anxiety Inventory (BAI) - Heart pou	NUMERIC	0;1;2;3	RECOMMENDED	HeartPoundScale	Numeric	0	0	
M BAIU	IUnsteadyScale	Beck Anxiety Inventory (BAI) - Unsteady	NUMERIC	0;1;2;3	RECOMMENDED	UnsteadyScale	Numeric			
I BAIT	ITerrifiedScale	Beck Anxiety Inventory (BAI) - Terrified o	NUMERIC	0;1;2;3	RECOMMENDED	TerrifiedScale	Numeric	1	1	
I BAIN	INervousScale	Beck Anxiety Inventory (BAI) - Feeling n	NUMERIC	0;1;2;3	RECOMMENDED	NervousScale	Numeric			
A BAIC	IChokingScale	Beck Anxiety Inventory (BAI) - Choking s	NUMERIC	0;1;2;3	RECOMMENDED	ChokingScale	Numeric	2	2	
AI BAIH	IHandsTrembling	Beck Anxiety Inventory (BAI) - Hands tre	NUMERIC	0;1;2;3	RECOMMENDED	HandsTremblingScale	Numeric	2	2	
AI BAIS	IShakyScale	Beck Anxiety Inventory (BAI) - Feeling s	NUMERIC	0;1;2;3	RECOMMENDED	ShakyScale	Numeric	3	-	
AI BAIF	IFearLosingCntrl	Beck Anxiety Inventory (BAI) - Fear of Io	NUMERIC	0;1;2;3	RECOMMENDED	FearLosingCntrlScale	Numeric			-
AI BAID	DiffcltyBreathing	Beck Anxiety Inventory (BAI) - Difficulty b	NUMERIC	0;1;2;3	RECOMMENDED	DiffcltyBreathingScale	Numeric			-
AI BAIF	IFearDyingScale	Beck Anxiety Inventory (BAI) - Fear of dyi	NUMERIC	0;1;2;3	RECOMMENDED	FearDyingScale	Numeric	Done	Cancel	-
AI BAIS	IscaredScale	Beck Anxiety Inventory (BAI) - Feeling s	NUMERIC	0,1,2,3	RECOMMENDED	scaredscale	Numeric			-
AI BAIIN	IndigestionScale	Beck Anxiety Inventory (BAI) - Indigestio	NUMERIC	0,1,2,3	RECOMMENDED	IndigestionScale	Numeric	0.4.0.0	Dentel Allel & Mar	_
AI BAIF	FaintScale	Beck Anxiety Inventory (BAI) - Feeling ta	NUMERIC	0,1,2,3	RECOMMENDED	Faintscale	Numeric	0,1,2,3	Double Click to Map	
I IHAIF:	FaceFillshedScale	Herk Annew Inventory (RAD - Fare flig	INTIME RIC	0111.2.4	REPERCIMMENDED	FaceFillshedScale	manmene	001.2.3	it to the Curk to Man	
		Output Direct	tory for mapping re	sult files:		Browse Save	Loa	d		
										_

- 4. Note: The Save button on the main table is only activated after all required elements must have been mapped (required elements are highlighted in red). We suggest that for a given form structre you complete your mapping in one session, without leaving the DMT/ETL tool.
- 5. To save the mapping file, first, click the Browse button at the bottom to select the output folder that the mapping output file will be saved to. The Save button brings up another file chooser that allows the user to choose the .txt file that the mapping output should go into, as well as create a new file if necessary.

🛃 Data Mapping	and Transformation Tools - B	eta version 0.8 (Prod)							-	<
Help										
Currently Connect	ed to:https://fitbir.nih.gov/									
Mapping Tool	Transform Tool									
	Get Form	Structures		Select	Form Structure				oad Source DFs	
Reference Form	Structure: BAI			00000						-
Group	Element Name	Title	Type	Reference PVs	Required	Source Name	Source Type	Source PVs	PV Mappings	
Form Auministrati	on contextrype	Context type	ALPHANUMERIC	Alter injury, At time of assessm.	OPTIONAL					
Form Administrati	on ContextTypeOTH	Context type other text	ALPHANUMERIC		OPTIONAL					21
Form Administrati	on DataSource	Data source	ALPHANUMERIC	Brother;Chart/Medical record;D.	OPTIONAL					
Form Administrati	on DataSourceOTH	Data source other text	ALPHANUMERIC		OPTIONAL					
BAI	BAINumbScale	Beck Anxiety Inventory (BAI) - Numbne	S NUMERIC	0;1;2;3	RECOMMENDED	NumbScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3	
BAI	BAIFeelHotScale	Beck Anxiety Inventory (BAI) - Feeling h	NUMERIC	0;1;2;3	RECOMMENDED	FeelHotScale	Caus Manual		× 1	
BAI	BAIWobblinessScale	Beck Anxiety Inventory (BAI) - Wobbline	NUMERIC	0;1;2;3	RECOMMENDED	WobblinessScale	save wappi	ng ba me	^	
BAJ	BAIUnableToRelaxS	Beck Anxiety Inventory (BAI) - Unable to	NUMERIC	0;1;2;3	RECOMMENDED	UnableToRelaxScale				- H
BAI	BAIFearWorstScale	Beck Anxiety Inventory (BAI) - Fear of th	NUMERIC	0;1;2;3	RECOMMENDED	FearWorstScale	Save In:	Documents	▼ 🖾 🔂 🗂 88 8=	
BAI	BAIDizzyScale	Beck Anxiety Inventory (BAI) - Dizzy sca	le NUMERIC	0;1;2;3	RECOMMENDED	DizzyScale				
BAI	BAIHeartPoundScale	Beck Anxiety Inventory (BAI) - Heart po	I NUMERIC	0;1;2;3	RECOMMENDED	HeartPoundScale	Custom 0	ffice Templates 🗂 SOLI	re	
BAI	BAIUnsteadyScale	Beck Anxiety Inventory (BAI) - Unstead	NUMERIC	0;1;2;3	RECOMMENDED	UnsteadyScale		nice remplaces back		
BAJ	BAITerrifiedScale	Beck Anxiety Inventory (BAI) - Terrified	D NUMERIC	0;1;2;3	RECOMMENDED	TerrifiedScale	BIS			
BAJ	BAINervousScale	Beck Anxiety Inventory (BAI) - Feeling r	NUMERIC	0;1;2;3	RECOMMENDED	NervousScale	My Receiv	ed Files		
BAI	BAIChokingScale	Beck Anxiety Inventory (BAI) - Choking	s NUMERIC	0;1;2;3	RECOMMENDED	ChokingScale	CineNote M	lotebooks		
BAI	BAIHandsTrembling	Beck Anxiety Inventory (BAI) - Hands tr	NUMERIC	0;1;2;3	RECOMMENDED	HandsTremblingScale				
BAI	BAIShakyScale	Beck Anxiety Inventory (BAI) - Feeling s	NUMERIC	0;1;2;3	RECOMMENDED	ShakyScale	Orthern			
BAI	BAIFearLosingCntrl	Beck Anxiety Inventory (BAI) - Fear of Ic	NUMERIC	0;1;2;3	RECOMMENDED	FearLosingCntrlScale	OV 🔄			
BAI	BAIDiffcItyBreathing	Beck Anxiety Inventory (BAI) - Difficulty	NUMERIC	0;1;2;3	RECOMMENDED	DiffcltyBreathingScale	📑 R			
BAI	BAIFearDyingScale	Beck Anxiety Inventory (BAI) - Fear of d	i NUMERIC	0;1;2;3	RECOMMENDED	FearDyingScale				
BAI	BAIScaredScale	Beck Anxiety Inventory (BAI) - Feeling s	NUMERIC	0;1;2;3	RECOMMENDED	ScaredScale				
BAI	BAIIndigestionScale	Beck Anxiety Inventory (BAI) - Indigesti	NUMERIC	0;1;2;3	RECOMMENDED	IndigestionScale	File Name:	BAI BRICS MAP		
BAI	BAIFaintScale	Beck Anxiety Inventory (BAI) - Feeling f	NUMERIC	0;1;2;3	RECOMMENDED	FaintScale				
BAI	BAIFaceFlushedScale	Beck Anxiety Inventory (BAI) - Face flus	NUMERIC	0;1;2;3	RECOMMENDED	FaceFlushedScale	Files of Type:	Text files (.txt)	-	
BAI	BAIHotColdSweatsS	Beck Anxiety Inventory (BAI) - Hot/cold	S NUMERIC	0;1;2;3	RECOMMENDED	HotColdSweatsScale				
Scores	BAITotalScore	Beck Anxiety Inventory (BAI) - Total sco	re NUMERIC		RECOMMENDED	BAITotalScore				
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6. The Load button allows you to reload the entire mapping table from the mapping output file. This allows the user to be able to go back and edit mappings with less effort involved. If an improperly formatted file is being selected to load, an error message will be shown.

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BRICS map file explained:

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RICSMap01: B										
Main Group	Exactly 1	GUID	GUID	GUID		REQUIRED	GUID	GUID		
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BAI	Exactly 0	BAIWobblinessScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	WobblinessScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAIUnableToRelaxScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	UnableToRelaxScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAIFearWorstScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	FearWorstScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAIDizzyScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	DizzyScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAIHeartPoundScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	HeartPoundScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAIUnsteadyScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	UnsteadyScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAITerrifiedScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	TerrifiedScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAINervousScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	NervousScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAIChokingScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	ChokingScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAIHandsTremblingScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	HandsTremblingScal	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
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BAI	Exactly 0	BAIFearLosingCntrlScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	FearLosingCntrlScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
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BAI	Exactly 0	BAIScaredScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	ScaredScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
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BAI	Exactly 0	BAIFaceFlushedScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	FaceFlushedScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
BAI	Exactly 0	BAIHotColdSweatsScale	Beck Anxiety Inventor	NUMERIC	0;1;2;3	RECOMMENDED	HotColdSweatsScale	Numeric	0;1;2;3	0:0;1:1;2:2;3:3
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Figure 4. BRICS map file explained

There is an example of the BRICS map file on **Figure 4**. In this example one can see the following information:

- In cell A1 "BAI" is the short name of BRICS form strutte. That give the system the information which BRICS variables to map to.
- Column C contains BRICS variable names
- Column F contains PVs for the correcponding BRICS variables
- Column H contains your variables, which are mapped to BRICS variables in column C
- Column J contains your PVs
- Column K contains PV mapping from your variable PVs to the corresoponding BRICS variable PVs
- Columns E and I contain datatypes for BRICS and your variables.

12.2.4 Saving the map file and transformation table

The DMT/ETL allows users to save and re-use map files and transformation table files for multiple data transformation and submission.

Which means you need to do actual mapping only once!

After the mapping is done sucsessfully, simply save both

- 1. The map file
- 2. The transformation table file

and re-use them for future submissions of similar data.



- To save the map file, press **Save** when you mapped all variables and PVs, while in the Mapping tool tab.
- To save the transformation table, in Transform tool tab, press **Save Transform Table** button and follow the instructrions provided.
- Use the **Load Transform Table** option to re-use the mapping file you created for multiple data mapping and transformation.

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12.2.5 Pair: Appending multiple source variables to a BRICS variables in the selected form structure

If your data is stored in a flattened format where multiple separate variables e.g., type_1, type_2, type_3, etc., represent repeated data points for a single BRICS variable, you will need to use **Pair: Append** functionality to make a many-to-one mapping. See the example below for how databases like REDCap might represent repeated variables. In this example, each row represents a single participant's data and the similarly colored variable names correspond to numbered instances of the same variable type.



1	A	В	c	D	E	F	G	Н	I
1	OSUTBIMSF								2
2	guid	ageyrs	casecontrlind	traumaticeventnum1	osutbimscausersn1	locind1	osutbimslocdurrang1	osutbimsdazememrygapind1	ageyrs1
3	TBI_INVAA222WWM	32	Case	1	Skiing accident	Yes	30 min-24 hrs	Yes	8
4	TBI_INVAA841CYJ	32	Case	1	Elbow to eye	No		Yes	28
5									
				J	К	L	М	N	0
				traumaticeventnum2	osutbimscausersn2	locind2	osutbimslocdurrang2	osutbimsdazememrygapind2	ageyrs2
				2	Trucked in football	No		No	23

The way this is currently structured will not comply with the BRICS data dictionary since there is only one BRICS variable available for each similarly colored variable above. However, this BRICS variable is part of a repeatable group within the form structure, which allows you to submit multiple data points against a single BRICS variable.

To map multiple variables to a BRICS data element from a selected form structure: Perform the following actions:

1. You will first need to create a data dictionary as described in Figure 2 in section <u>10.1.1</u>. Some of these PVs are free-text, so you do not need to enter a PV.

1	A	В	C	D
1	Name	Туре	PVs	PV Description (Optional)
2	guid	GUID		
3	ageyrs	Numeric		
4	casecontrlind	Alphanumeric	Control;Case	
5	traumaticeventnum1	Alphanumeric	1	
6	osutbimscausersn1	Alphanumeric		
7	locind1	Alphanumeric	No;Yes	
8	osutbimslocdurrang1	Alphanumeric	30 min-24 hrs;less than 30 min; more than 24 hours	
9	osutbimsdazememrygapind1	Alphanumeric	No;Yes	
10	ageyrs1	Numeric		
11	traumaticeventnum2	Alphanumeric	2	
12	osutbimscausersn2	Alphanumeric		
13	locind2	Alphanumeric	No;Yes	
14	osutbimslocdurrang2	Alphanumeric	30 min-24 hrs;less than 30 min; more than 24 hours	
15	osutbimsdazememrygapind2	Alphanumeric	No;Yes	
16	ageyrs2	Numeric		
17				

- **2.** As described before in steps 1-3 in section <u>10.2.1</u>, you will load your BRICS form structure as well as your data dictionary into the DMT/ETL tool and open the Source Data Element window.
- 3. In the example below, the first three variables were already paired in a one-to-one fashion using **Pair**. In order to map both source variables *traumaticeventnum1* and *traumaticeventnum2* to the BRICS variable *TraumaticEventNum*, keep the BRICS variable highlighted while you highlight each source variable one-by-one and click **Pair**: **Append**.

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4. Continue this process for each many-to-one mapping.

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d data elements have	been mapped - mappe	ng file can now be saved.									
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5. After completing the rest of the mappings, you will need to map source variable permissible values to BRICS permissible values as in section <u>10.2.3</u>. When you click **Double Click to Map** for our many-to-one example, you will be able to assign your source variables to the reference permissible values of the BRICS data element.

🍰 Data Mapping	and Transformation	Tools - Beta version 0.8 (Prod)											×
Help													
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Mapping Tool	Transform Tool												
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- 6. Once the PV mappings are complete, proceed to the transform tool and follow the same steps as in section 10.2.4 to save the mapping file and transform table.
- 7. In section <u>10.3</u> you will learn how to use the **Transform Tool** in order to transform your data into a BRICS submission ready csv format as seen below. Notice that your initial related variables have been consolidated to a single BRICS variable (Group name.Variable name) and multiple reported events are now listed as extra rows in accordance with that form structure's group repeatability.

Å	A	В	С	D	E		F	G
1	OSUTBIMSF							
2	record	Main.GUID	Main.AgeYrs	Main.CaseContrlInd	History of LOC.TraumaticEve	ntNum	History of LOC.OSUTBIMSCauseRsn	History of LOC.LOCInd
3	x	TBI_INVAA222WWM	32	Case		1	Skiing accident	Yes
4						2	Trucked in football	No
5	x	TBI_INVAA841CYJ	32	Case		1	Elbow to eye	No
6								
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						No		23
						Yes		28



12.3 USING THE TRANSFORM TOOL

Transform tool takes the source data, transformation table and the mapping files to create a properly formatted output file.

12.3.1 Transforming your data to BRICS format

- **1.** In the main Data Mapping and Transformation Tools window, Select the **Transform Tool** tab option.
- 2. The Transform Tool Table box appears.
- 3. Double-click on the Source Data Files column to bring up the Choose Data Files to be Transformed dialog window where you may choose data files (CSV) to be transformed. Note: The path and file name will be written into the cell.
- 4. **Double-click** on the **Mapping Files** column to bring up the **Choose Mapping Files** dialog window where you may choose mapping files associated with the source data loaded in the first column. **Note**: The path and file name will be written into the cell.

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Irrently Connec	cted to:https://fitbir.nih.gov/					
Mapping Tool	Transform Tool					
	A. L.	Remove Row	Save Transform Table	Load Transform Table		
Transform file 1	mapping table]	
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ccessful retrieva	al of form structures from Prod environment.					
ccessiui retrieva	at of data elements for form structure: BAI					
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- 5. Double-click on the Output Files column to bring up the Edit Transform Output Name dialog window where you may name the output file from the transform tool. Note: The output file will be in CSV format.
- 6. Click on the **Browse** button located at the bottom of the tool. The Choose Output Directory for Transform Result Files dialog window appears where you can choose the folder that the output file will go into when it is successfully transformed.

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- 7. Click on the Transform button which will take the data from the source and mapping files to switch out the source DEs and PVs for the ones that were mapped to in the mapping file. A new file will be created under the name specified in the third column.
- 8. Check the Output Log window. If transformation was completed successfully, the following srting appears in the Output Log window:



Where

- "BAI test data ETL.csv" is your data file which needs to be mapped to BRICS format and variables
- "BRICS BAI mapped data.csv" is the transformed file in BRICS format (and variables) ready for upload.
- **9.** Click the **Save Transform Table** button which will bring up the Save Transform Table dialog window where you can save the contents of the actual transformation table.

When you might get errors:

If all three columns in Transform tool tab are not filled out correctly, this will create an error message.

Additionally, if the source file and mapping file are inconsistent, an error message will appear.

12.3.2 Load Transform Table

The **Load Transform Table** option allows you to re-use the mapping file you created for multiple data mapping and transformation. If, during the previous staps, you saved both the map file and transformation file is a given directory on your local disk, you can re-use the them to transform your next datafile.

- **10.** Click the **Load Transform Table** button which will bring up the **Reload Transform Table** dialog window where you can select the file where the table was saved. When the Open is selected, the contents of the previously saved table are written back into the table allowing you to edit the files you are using for the transformation tool.
- **11.** The **Transform Table** showing the reloaded transform table with source data files, mapping files and output (CSV) files.



Mapping Tool Transform Tool		
	Remove Row Save Transform Table Load Transform Table	
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Source Data Files	🛞 Reload Transform Table	Output Files
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Data Mapping and Transformation Tools - Beta version 0.3 (Jemo)				
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					-
					12
Output d	irectory for transformed result file	s: C:\Users\koretskymj\Docu	ments\ Browse	Transform	
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il required data elements have been mapped - mapping hie can now	be saved.				



12.3.3 Viewing Help Pages

The help pages provide you with some useful information that will help you to effectively perform the functions in the DMT/ETL tool.

To access the help pages: Perform the following actions:

1. In the main Data Mapping and Transformation Tools window, Select the **Help** tab option located on the top-left corner.

Data Mapping and Transformation Tools - Beta version 0.3 (Demo)									
Mapping Tool Transform Tool									
	Remove Row	Save Transform Table	Load Transform Table						
Transform file mapping table									
Source Data Files		Mapping Files		Output Files					
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					_				
Output directory for transformed result files: Transform									
Output log					_				
Successful retrieval of form structures.									
Successful retrieval of form structures.									
Successful retrieval of data elements for form structure: BM_Preclinical									

2. The Help menu option opens. Click on the Help Web Page which loads the Data Dictionary site.

Data Mapping and Tran Help Help web page	nsformation Tools - E	leta version 0.3 (Demo)								
JVM information Sample Source DE CSV	Get Form Structu	ires	Select Form Structure				Load Source DEs			
Group	Element Name	Title	Туре	Reference PVs	Required	Source N	Source Type	Source PVs	PV Mappings	
		Output Directory for mapping re	esult files: C:\Users\kore	tskymj\Documents\	Browse	Save	Load			
Output log										



3. Click on the **JVM Information** option which pulls up an extensive information on the Java Virtual Machine running.

Data Mapping an Help	d Transformation Tools - 8	3eta version 0.3 (Demo)							
JVM information	Get Form Structu	1105		Select Form Structure			Loa	d Source DEs	
Group	Element Name	Title	Туре	Reference PVs	Required	Source NS	Source Type Sc	ource PVs	PV Mappings
		Output Directory for mapping	result files: C:\Users\koret	tskymj\Documents\	Browse	Save	Load		
Output log									
L									

4. Click on the Sample Source DE CSV option which pulls up a dialog window showing the format that Data Elements and Permissible Values files must be in for mapping purposes.

Data Mapping and Help Help web page	i Transl	formation Tools - B	Beta version 0.3 (Demo)								
JVIII information		Get-Eprm Structures		Select Form Structure				Load Source DEs			
Group Element Name Title			Type Reference PVs		Reference PVs	Required	Source N Source Type		Source PVs	PV Mappings	
			Output Directory for mapping	esuit files: C:	:VUsers\koret	skym//Documents\	Browse	Save	Load		
Output log	_			2101/2017/2017/2017							



5. Sample CSV used for mapping data appears. Click the **Close** button to close the window.

8					
Sample CSV Used for Mapp BRICSMap01 ID is needed i BRICSMap01	bing Data. Note that PV Descrij in first cell in order to map files	ption and Titl s (shown abo	le are Optional ove table)		
Name	Туре	F	PVs	PV Description (Optional)	Title (Optional)
aderwe5	Numeric	1;2;3;5	High;	Low;Lower;Lowest	This is a title
aderwe6	Numeric	1;2;3;5;	High;	Low;Lower;Lowest	This is a title2
age014x	Numeric				Age of subject
textelement1	Alphanumeric	One;Two	One;	Two	Alphanumica test
truefalse1	Boolean	0;1	True;	False	True/False test
			Close		