

Table 1: Comparison of fMRI preprocessing workflows.

	<i>fMRIPrep</i>	AFNI <code>afni_proc.py</code>	C-PAC	HCP Pipelines	FSL <code>feat</code>
Scope	Preprocessing	End-to-end ^a	End-to-end	End-to-end	End-to-end
Acquisition protocol	Any (self-adaptive)	Any (configurable)	Resting-state fMRI	HCP-like protocols	Any (configurable)
BIDS	Required	In progress	Supported	Unsupported	Unsupported
BIDS-Derivatives	Compliant	In progress	In progress	Unsupported	Unsupported
Single-subject, single-run	Auto	Auto	Auto	Auto	Auto
Single-subject, multi-run	Auto	Manual	Auto	Auto	Manual
Multi-subject	Auto	Manual	Auto	Manual	Manual
Source license	Open (BSD)	Open (GPL)	Open (BSD)	Open (BSD)	Open (Custom)
Use restrictions	Non-commercial [•]	None	Non-commercial [•]	Non-commercial [•]	Non-commercial
Community-driven	Yes	No	No	No	No
Combines packages	Yes	No	Yes	Yes	No
Open CI/CD	Yes	No	No	No	No
Containerization	Full	Full	Full	Third-party	Third-party
BIDS-App	Full	In progress	Full	Third-party	N/A
User Interface	CLI	GUI, CLI	SFI [*]	CLI	SFI [*]
Manual operation	Minimal	Extensive	Minimal ^c	Limited	Extensive
Self-documenting [◦]	Yes	No	No	No	No
Output spaces	Vol., surf., mixed	Volume ^b	Volume	Mixed	Volume
TemplateFlow	Yes	N/A	N/A	N/A	N/A
CIFTI2 grayordinates	Full (v20+)	N/A	N/A	Full	N/A

We excluded SPM from the comparison since it does not support automatic processing without the use of extensions.

Notes: ◦ *Self-documenting* refers to the possibility of dynamically generating a description in natural language containing all the details about the executed processing workflow, including references to the scientific literature. • Due to use of FSL, which has non-commercial restrictions. * The user prescribes the processing steps via a configuration file, which can be generated with a GUI helper. ^a Although these tools do not prescribe specific tailored analysis, the user is required to adapt the outputs to new tools other than the one used to generate the preprocessed inputs in first place. ^b Surface analysis is possible with SUMA (*AFNI Surface Mapper*). ^c Manual operation is not necessary when using default settings –for more sophisticated configurations, pervasive manual operation is required.

Abbreviations: CI/CD: Continuous integration and delivery; CLI: command-line interface; GUI: Graphical User Interface; SFI: Settings File Interface;