**Supplemental Table S1. Comparison among Similar ICA Researches**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Paper[year]** | **Image Type** | **Disease/Groups** | **Patients/N** | **Patients/Age** | **Control/N** | **Control/Age** | **ICA numbers** | **Tool** | **Features** |
| Greicius, M.D.,  et al [1] 2004 | fMRI | AD | 13 | 68.0 – 83.0 | 28 (14,14) | 66.0 – 89.0  18.0 – 24.0 | 31 | Multivariate Exploratory Linear  Decomposition (MELODIC) | Two-sample t test |
| Sorg, C., et al  [2] 2007 | fMRI | MCI | 24 | 69.3 ± 8.1 | 16 | 68.1± 3.8 | 15,39,54 | GIFT toolbox | Functional brain  networks from ICA |
| Greicius, M.D.,  et al.[3] 2007 | fMRI | MDD | 11 | / | 17 | / | 25 | MELODIC | one-sample t-tests |
| Calhoun, V.D ,et al [4] 2008 | fMRI | Schizophrenia (SP) | 20 | 39.7 ± 10.1 | 20 | 31.2 ± 10.9 | 19 | GIFT toolbox | Functional brain  networks from ICA |
| Sui, J., et al.  [5] 2009 | fMRI | SP | 25 | 32.0 ± 12.0 | 28 | 32.0 ± 13.0 | 8-16 | Joint independent component analysis (jICA) | Spatial features, templates |
| Filippini, N.,  et al.[6] 2009 | fMRI | APOE - ε4 allele | 18 | 28.4 ± 4.9 | 18 | 28.6 ± 3.9 | 25 | MELODIC | Encoding memory paradigm using blood oxygen  level-dependent fMRI |
| Vince, D.,  et al.,[7] 2009 | fMRI | SP | SZ 21  BP 14 | SZ 34.9 ± 11.8  BP33.2 ± 9.9 | 26 | 30.3 ± 8.8 | 30 | GIFT toolbox | one-sample t-test |
| Veer, I.M.,  et al.[8] 2010 | fMRI | MDD | 19 | 36.1 ± 10.6 | 19 | 36.2 ± 9.7 | 20 | MELODIC | t-test, Functional brain  networks from ICA |
| Fan, Y., et al  [9] 2011 | fMRI | SP | 31 | 24.0 ± 6.0 | 31 | 26.0 ± 4.0 | 19 | GIFT toolbox | Functional brain  networks from ICA |
| Ahmed, A.E.,  et al [10] 2011 | fMRI | seasonal affective disorder (SAD) | 45 | 39.8 ± 10.6 | 45 | / | 20-150 | MELODIC | dual regression |
| Petrella, J.R.,  et al [11]2011 | fMRI | MCI，AD | AD12  MCIc11  MCInc20 | 72.0 ± 5.9,  76.2 ± 6.0,  72.3 ± 9.3 | 25 | 70.8 ± 4.3 | 20 | GIFT toolbox | Goodness-of-fit (GOF) indices  of DMN expression |
| Binnewijzend, M.A., et al.[12]  2012 | fMRI | AD | 39 | 67.0 ± 8.0 | 43 | 69.0 ± 7.0 | 27 | MELODIC | Functional brain  networks from ICA |
| Du, W., et al  [13] 2012 | Task fMRI | SP | 28 | 39.4 ± 12.7 | 28 | 31.5 ± 11.7 | 40 | GIFT toolbox | Spatial components  from ICA |
| Damoiseaux, J.S., et al [14] 2012 | fMRI | AD | 21 | 64.2 ± 8.7 | 18 | 62.7 ± 10.3 | 25 | MELODIC | dual regression |
| Fan, T., et al [15]2012 | fMRI | Bipolar depression | 21 | 31.1 ± 8.5 | 21 | 31.6 ± 8.9 | 17 | GIFT toolbox | one-sample  t-tests and two-sample t-tests |
| Arbabshirani, M.R., et al.  [16] 2013 | fMRI | SP | 28 | 39.7 ± 10.1 | 28 | 36.5 ± 11.3 | 20 | GIFT toolbox |  |
| Vanessa, S., et al. [17] 2014 | fMRI | SP | 24 | mean age 35.13 | 29 | mean age 29.5 years | 19 and 25 respectively | MELODIC | 246 features, spatial and  temporal |
| Hoekzema, E.,  et al.[18] 2014 | fMRI | ADHD | 22 | 32.8±10.8 | 23 | 29.3 ± 8.9 | 20 | GIFT toolbox | t-test |
| Maneshi, M.,  et al [19] 2014 | fMRI | Mesial temporal lobe epilepsy (MTLE) | 10 | 29.0 ± 11.0 | 10 | 32.0 ± 9.0 | 30-50 | MELODIC | The func-tional connectivity of each reliable specific resting-state network |
| Kaufmann, T.,  et al.[20] 2015 | fMRI | SP | 71 | 28.2 ± 7.8 | 196 | 31.5 ± 7.8 | 20-80 | MELODIC | Functional brain  networks from ICA |
| Baggio, H.C.,  et al.[21] 2015 | fMRI | Parkinson | 65 (43,22) | 64.0 ± 9.8,  66.1 ± 12.2 | 38 | 63.4 ± 10.5 | 25 | MELODIC | Functional brain  networks from ICA |
| Tessitore, A., et al [22] 2016 | fMRI | Parkinson | 40 (20,20) | 62.1, 61.5, 61.5, 61.2 | 20 | 60.3 -62.1 | 40 | FastICA and the self-organizing group ICA (sogICA)  algorithms | Functional brain  networks from ICA |
| He, H., et al.  [23] 2016 | fMRI | MDD | 53 (13,40) | 35.2 ± 10.3,  35.2 ± 9.3 | 33 | 33.7 ± 10.2 | 75 | GIFT toolbox | one-sample t-test |
| Yang, W.,  et al.[24] 2017 | fMRI | AD | 70 | 77.2 ± 6.2 | 140 | 75.7 ± 3.8 | 27 | GIFT toolbox | t-test, Functional brain  networks from ICA |
| Qureshi, M.N.I., et al.[25] 2017 | fMRI | SP | 72 | 38.2 ± 13.9 | 72 | 38.9 ± 11.7 | 30 | MELODIC | Functional brain  networks from ICA |
| Skåtun, K.C., et al.[26] 2017 | fMRI | SP | 182 | 28.7-51.4 | 348 | 31.9 - 64.4 | 80 | meta-ICA approach - | Functional brain  networks from ICA |
| Wu, X.J., et al.,  [27] 2017 | fMRI | Schizophrenia,MDD | 24 schizo-  phrenia,  20 MDD | schizophrenia  25.3 ±6.2,  MDD  26.6 ±7.7 | 43 | 28.2 ± 7.2 | 30 | GIFT toolbox | Functional brain  networks from ICA |
| Komal, B., et al.,  [28] 2017 | fMRI | Progressive supranuclear palsy (PSP) and corticobasal syndrome  (CBS) | 31 (20,11) | 69.3 ± 4.8,  66.0 ± 3.9 | 16 | 69.4±4.9 | 25 | MELODIC | Functional brain  networks from |
| Lottman, K.K.,  et al [29] 2017 | fMRI | SP | 34 | 32.4 ± 10.4 | 35 | 32.0 ± 8.9 | 100 | GIFT toolbox | Functional brain  networks from |
| Du, Y., et al  [30] 2017 | fMRI | Schizophrenia | 53 CHR, 58 ESZ | 20.4 ± 4.5,  21.8 ± 3.8 | 70 | 21.9 ± 5.6 | 30 | GIG-ICA | Functional brain  networks from ICA |
| Wang, L.,  et al.[31] 2018 | fMRI | Internetgamingdisorder(IGD) | 18 | 21.5 ± 2.0 | 19 | 22.3 ± 1.8 | 20 | GIFT toolbox | Functional brain  networks from ICA |
| Osuch, E., et al [32] 2018 | fMRI | Mood disorder diagnosis | BD32,  MDD34 | 21.3 ± 2.9 | 33 | 20.2 ± 2.0 | 20 | GIFT toolbox | Functional brain  networks from ICA |
| Zhang, S.,  et al.[33] 2018 | fMRI | MDD | 53 (35,18) | 20.6 ± 3.7,  21.3 ± 3.0 | 47 | 20.5 ± 1.9 | 40 | MICA toolbox | Functional brain  networks from ICA |
| Fu, Z., et al  [34] 2018 | fMRI | SP | 151 | 37.8 ± 11.4 | 163 | 36.9 ± 11.0 | 100 | GIFT toolbox | Calculate dALFF and dALFF-dFC correlations. |
| Qiao, J., et al.  [35] 2018 | fMRI | AD | 34 | 68.6 ± 9.9 | 34 | 68.6 ± 9.9 | 20-120 | GIFT toolbox | 3LHPM-ICA method, Functional brain  networks from ICA |
| Wu, L., et al.  [36] 2018 | fMRI | SP | 60. | 38.6 ± 13.4 | 61 | 35.0 ± 10.5 | 50 | GIFT toolbox | Functional brain  networks from ICA |
| Zhu, X., et al.  [37] 2018 | fMRI | alcohol use disorder (AUD) | 46 | 40.4 ± 9.7 | 46 | 32.0 ± 8.9 | 32 | MELODIC | Functional brain  networks from ICA |
| Su, J., et al  [38] 2019 | fMRI | CADASIL | 22 | 48.9 ± 14.2 | 44 | 48.4 ± 13.7 | 31 | GIFT toolbox | Functional brain  networks from ICA |
| Díez-Cirarda, M., et al.[39] 2018 | fMRI | Parkinson | 35 (12,23) | 65.2 ± 8.3,  69.2 ± 4.5 | 26 | 68.3 ± 7.5 | 100 | GIFT toolbox | Network-based statistic (NBS) approach |
| Xiao, F.,  et al.[40] 2019 | MRI | Narcolepsy | 26 | 25.8 ± 6.6 | 30 | 25.4 ± 4.3 | 48 | GIFT toolbox | Functional brain  networks from ICA |
| Fiorenzato, E.,  et al.,[41] 2019 | fMRI | Parkinson | 118 (52,46,20) | 58.6 ± 9.9,  65.9 ± 11.4,  71.8 ± 6.6 | 35 | 61.3 ± 8.9 | 120 | GIFT toolbox | Sliding window approach |
| Salman, M.S., et al [42] 2019 | fMRI | SP | 87 | / | 100 | / | 100 | GIFT toolbox | Functional brain  networks from ICA |
| Lin, H., et al.  [43] 2020 | fMRI | MDD | 59 | 57.6 ± 10.7  (41.0 – 75.0) | 97 | 61.2 ± 9.5 (44.0 - 79.0) | 100 | MELODIC | Functional brain  networks from ICA |
| Navalpotro-Gomez, I., et al.  [44] 2020 | fMRI | Parkinson | 36  (16, 20) | 61.3 ± 8.2,  63.5 ± 8.1 | 17 | 63.5 ± 9.7 | 100 | GIFT toolbox | Sliding window and graph-theory analyses |
| Jiao, K., et al.,  [45] 2020 | fMRI | MDD | 38  (19, 19) | / | 19 | / | **47, 49, and 50respectively** | GIFT toolbox | Functional brain  networks from ICA |
| Cai, X.L.,  et al.[46] 2020 | fMRI | SP | 51 | 43.2 ± 10.9 | 51 | 42.0 ± 12.2 | 30 | GIFT toolbox | Functional brain  networks from ICA |
| Gürsel, D.A., et al [47] 2020 | fMRI | Obsessive–compulsive disor-  der | 42 | 34.4 ± 12.1 | 50 | 35.1 ± 10.0 | 20 | GIFT toolbox | Sliding time window analysis |

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