Analysis

Preprocessing

- experiment_results.csv
- task_questionnaire_results.csv
- final_questionnaire_results.csv
- demographic_data_fixed.csv

Dropping Task ID 0 (Training)

Asserting Absolute Distance Values!

Dataset Validation:
dict_items([('pid', True)])

Adding success column based on
`opt_interactions == interactions`
in order to measure effectiveness.

Split by Navigation, Pid, Tid, apply `mean` combine!

Drop jid and pid columns

Computing efficiency task $1000 * mean_s uccess/mean_t ime_m s$

Using normality test: shapiro

Demographics

age

	age
count	50.0
mean	24.1
std	2.90144228737
min	20.0
25%	22.0
50%	24.0
75%	25.0
max	35.0

sex

('f', 29)
('m', 21)

job

('Agrarwissenschaften', 5)
('Agribusiness', 1)
('Betriebswirtschaftslehre', 1)
('Biochemie', 1)
('Biologie', 1)
('Ernährungs- und Verbraucherökonomie', 2)
('Finanzmathematik', 2)
('Informatik / Nachhilfelehrer', 1)
('Mathemathik / Chemie', 1)
('Mathemathik / Deutsch / Psychologie', 1)
('Mathemathik / Geologie', 1)
('Mathemathik / Geschichte', 1)
('Mathemathik / Philosophie', 1)
('Mathemathik / Physik', 1)
('Mathemathik / Sport', 1)
('Mathematik', 4)
('Mathematik / Informatik', 1)
('Mathematik / Spanisch', 1)
('Medizin', 1)
('Musikwissenschaft / Philosophie', 1)
('Physik', 1)
('Politikwissenschaft / Ur- und Frühgeschichte', 1)
('Psychologie', 4)
('Rechtswissenschaften', 1)
('Soziologie / Pädagogik', 1)
('Volkswirtschaftslehre', 3)
('Wirtschaftsinformatik', 6)
('Wirtschaftsingenieur', 2)
('Wirtschaftswissenschaften Profil: Handelslehrer', 1)

smartphone

('None', 1)
('android', 37)
('nodroid', 12)

comments

('Ich zweifle die Aussagekraft der Studie an, da die Navigation nur aus „Wischen nach links" und „Wischen nach rechts" besteht.', 1)
('Menü-Steuerung: nur 5/7 Steine da: Menü zum Ausklappen. besser: dauerhaft ausgeklappt - >1 Klick statt 2', 1)

('Samsung', 1)
('man könnte die Bedienung noch vereinfachen, indem man durch wischen von
Tür zu Tür kann', 1)
('schön kurz :)', 1)

Efficiency by Tasks

Descriptions (efficiency)

Global Descriptions (efficiency)

burger

	efficiency
count	110.0
mean	0.223055228972
std	0.0500230406763
min	0.068976220448
25%	0.190058286882
50%	0.22691177807
75%	0.25700334919
max	0.336157052575

shapiro
(0.982802152633667, 0.16857866942882538)

swipe

	efficiency
count	140.0
mean	0.215488934466
std	0.100837665235
min	0.0783468808148
25%	0.140770307033
50%	0.186047319425
75%	0.267820085532
max	0.514986095375

shapiro
(0.8906473517417908, 9.997179084564323e-09)

Repeated measures (efficiency)

burger

KruskalResult(statistic=21.228960676540432, pvalue=0.00028522628404656868)
FriedmanchisquareResult(statistic=30.509090909090901, pvalue=3.8548715779974447e-06)

swipe

KruskalResult(statistic=91.910160660008614, pvalue=5.1718364795390112e-19)
FriedmanchisquareResult(statistic=80.628571428571377, pvalue=1.2818240657137304e-16)

Descriptions per tid (efficiency)

('burger', 1)

	efficiency
count	22.0
mean	0.259627939777
std	0.03615089292
min	0.189458527528
25%	0.242800150862
50%	0.263092621632
75%	0.281021933116
max	0.336157052575

shapiro
(0.9797267913818359, 0.9116690158843994)

('burger', 2)

	efficiency
count	22.0
mean	0.218885902709
std	0.0617582924756
min	0.068976220448
25%	0.175369392634
50%	0.229429832866
75%	0.262567057042

	efficiency
max	0.298650101541

shapiro
(0.9300146698951721, 0.12278316169977188)

('burger', 3)

	efficiency
count	22.0
mean	0.207954767299
std	0.0501700789335
min	0.0904895484572
25%	0.177580422745
50%	0.214082948414
75%	0.246063771629
max	0.280033604032

shapiro
(0.9594280123710632, 0.47780340909957886)

('burger', 4)

	efficiency
count	22.0
mean	0.228578290867
std	0.0445345887587
min	0.113259903163
25%	0.21190614273
50%	0.227615297646
75%	0.251743012241
max	0.304284323272

shapiro
(0.9578091502189636, 0.4463047385215759)

('burger', 5)

	efficiency
count	22.0
mean	0.200229244208
std	0.0336254251422
min	0.144350135689
25%	0.177255912416
50%	0.196225661233
75%	0.22656990971
max	0.255076012652

shapiro
(0.9565542340278625, 0.4229176640510559)

('swipe', 1)

	efficiency
count	28.0
mean	0.376411637958
std	0.0826782359999
min	0.124738828079
25%	0.339208375025
50%	0.385810331212
75%	0.43554876804
max	0.514986095375

shapiro
(0.9320521354675293, 0.06946220248937607)

('swipe', 2)

	efficiency
count	28.0
mean	0.235764444338
std	0.0515833509387
min	0.0783468808148
25%	0.214528622096
50%	0.250787488437
75%	0.270937446389
max	0.305866519851

shapiro
(0.8996769189834595, 0.011243253946304321)

('swipe', 3)

	efficiency
count	28.0
mean	0.176438327988
std	0.0368031666814
min	0.106547333653
25%	0.149048762852
50%	0.183800941036
75%	0.207357536463
max	0.233165454206

shapiro
(0.9592775106430054, 0.335141658782959)

('swipe', 4)

	efficiency
count	28.0
mean	0.158462999373
std	0.0321520787395
min	0.0888474267564
25%	0.137780626155
50%	0.155438077528
75%	0.183456377089
max	0.223483663344

shapiro
(0.9860244989395142, 0.9621443152427673)

('swipe', 5)

	efficiency
count	28.0
mean	0.130367262672
std	0.0267090785385
min	0.0821186614658

	efficiency
25%	0.120638250545
50%	0.128225214081
75%	0.143514673291
max	0.182588372772

shapiro
(0.9574891924858093, 0.30354103446006775)

Cross-compare Tests per tid (efficiency)

('burger', 1) vs ('burger', 2)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': 0.94675972197265956, 'test_result': Ttest_relResult(statistic=3.1400467644045085, pvalue=0.0049443978028402098)}

('burger', 1) vs ('burger', 3)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': 1.2011056601611565, 'test_result': Ttest_relResult(statistic=3.9836168083266799, pvalue=0.00067564806607191632)}

('burger', 1) vs ('burger', 4)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': 0.84922261727279125, 'test_result': Ttest_relResult(statistic=2.8165527849774352, pvalue=0.010338413955597564)}

('burger', 1) vs ('burger', 5)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': 2.6611888863322943, 'test_result': Ttest_relResult(statistic=8.8261650322279657, pvalue=1.6451903254595333e-08)}

('burger', 1) vs ('swipe', 1)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 38.785742202473031, 'effect_size': -1.9097298327149146, 'test_result': Ttest_indResult(statistic=-6.7031245086454758, pvalue=5.6381782972874956e-08)}

('burger', 1) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.24350649350649356, 'n1': 22, 'test_result': Mannwhitneyu Result(statistic=233.0, pvalue=0.072691640416537293), 'n2': 28}

('burger', 1) vs ('swipe', 3)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 45.605549072886376, 'effect_size': 2.2829620500029861, 'test_result': Ttest_indResult(statistic=8.0131642746175658, pvalue=3.0036765567743509e-10)}

('burger', 1) vs ('swipe', 4)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 42.458884481600464, 'effect_size': 2.9366881218094303, 'test_result': Ttest_indResult(statistic=10.307733474302083, pvalue=3.9626211595999131e-13)}

('burger', 1) vs ('swipe', 5)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 37.509707823002977, 'effect_size': 3.9971846751859452, 'test_result': Ttest_indResult(statistic=14.030061269834485, pvalue=1.6751765716561837e-16)}

('burger', 2) vs ('burger', 3)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': 0.354401479193034, 'test_result': Ttest_relResult(statistic=1.17541673163024, pvalue=0.25298310480066288)}

('burger', 2) vs ('burger', 4)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': -0.27581681953294068, 'test_result': Ttest_relResult(statistic=-0.91478090125993261, pvalue=0.37069158497461707)}

('burger', 2) vs ('burger', 5)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': 0.51539165603199966, 'test_result': Ttest_relResult(statistic=1.7093607431380531, pvalue=0.10212210775377208)}

('burger', 2) vs ('swipe', 1)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 47.903652892032788, 'effect_size': -2.1964344153980879, 'test_result': Ttest_indResult(statistic=-7.7094535097442627, pvalue=6.1460659425243401e-10)}

('burger', 2) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.14610389610389607, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=263.0, pvalue=0.19222905550361363), 'n2': 28}

('burger', 2) vs ('swipe', 3)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 32.392545034300269, 'effect_size': 0.8121269529860301, 'test_result': Ttest_indResult(statistic=2.8505540361974759, pvalue=0.0075330728311379285)}

('burger', 2) vs ('swipe', 4)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 29.84388793928602, 'effect_size': 1.1871061872924931, 'test_result': Ttest_indResult(statistic=4.1667258070177873, pvalue=0.00024295893165475588)}

('burger', 2) vs ('swipe', 5)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 27.169372064223619, 'effect_size': 1.7884292636279995, 'test_result': Ttest_indResult(statistic=6.2773612390822446, pvalue=9.9419198495425322e-07)}

('burger', 3) vs ('burger', 4)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': -0.7374996248322695, 'test_result': Ttest_relResult(statistic=-2.4460095385965119, pvalue=0.023338332791632995)}

('burger', 3) vs ('burger', 5)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': 0.23656134754591945, 'test_result': Ttest_relResult(statistic=0.78458522971067601, pvalue=0.4414581754358432)}

('burger', 3) vs ('swipe', 1)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 45.413055852663888, 'effect_size': -2.5346208780888522, 'test_result': Ttest_indResult(statistic=-8.8964831763080898, pvalue=1.638058471616648e-11)}

('burger', 3) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.36038961038961037, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=197.0, pvalue=0.015401027053631673), 'n2': 28}

('burger', 3) vs ('swipe', 3)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 37.322733521049877, 'effect_size': 0.70376045931483877, 'test_result': Ttest_indResult(statistic=2.470189187096973, pvalue=0.018195085242505033)}

('burger', 3) vs ('swipe', 4)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 33.987304407263395, 'effect_size': 1.1462100107866362, 'test_result': Ttest_indResult(statistic=4.0231808100500288, pvalue=0.00030313523132898115)}

('burger', 3) vs ('swipe', 5)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 30.228298418120758, 'effect_size': 1.8689406873961953, 'test_result': Ttest_indResult(statistic=6.5599551896199069, pvalue=2.8434885910251012e-07)}

('burger', 4) vs ('burger', 5)

{'n1': 22, 'N': 44, 'n2': 22, 'df': 21, 'effect_size': 0.84300225316077249, 'test_result': Ttest_relResult(statistic=2.7959221711584767, pvalue=0.010828183767257568)}

('burger', 4) vs ('swipe', 1)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 43.071161614293338, 'effect_size': -2.3036145286208778, 'test_result': Ttest_indResult(statistic=-8.0856541803709163, pvalue=3.5438757244843004e-10)}

('burger', 4) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.14935064935064934, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=262.0, pvalue=0.18693288210180464), 'n2': 28}

('burger', 4) vs ('swipe', 3)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 40.510976522970402, 'effect_size': 1.2621200986811547, 'test_result': Ttest_indResult(statistic=4.430023567415585, pvalue=6.9900388209403688e-05)}

('burger', 4) vs ('swipe', 4)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 36.907897952812725, 'effect_size': 1.7720819828888703, 'test_result': Ttest_indResult(statistic=6.2199825165556213, pvalue=3.1960770384704573e-07)}

('burger', 4) vs ('swipe', 5)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 32.52632637459962, 'effect_size': 2.6020850201949877, 'test_result': Ttest_indResult(statistic=9.1332813540710109, pvalue=1.7051757569924315e-10)}

('burger', 5) vs ('swipe', 1)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 37.431678148502876, 'effect_size': -2.919842346861758, 'test_result': Ttest_indResult(statistic=-10.248605044204545, pvalue=2.045361952158588e-12)}

('burger', 5) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.51623376623376616, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=149.0, pvalue=0.0009750243017655867), 'n2': 28}

('burger', 5) vs ('swipe', 3)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 46.852508622129029, 'effect_size': 0.67859393927802347, 'test_result': Ttest_indResult(statistic=2.3818550602659152, pvalue=0.021339025726255848)}

('burger', 5) vs ('swipe', 4)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 44.248400605855807, 'effect_size': 1.2662092998006793, 'test_result': Ttest_indResult(statistic=4.4443766050942699, pvalue=5.8417405173783915e-05)}

('burger', 5) vs ('swipe', 5)

{'n1': 22, 'N': 50, 'n2': 28, 'df': 39.442494949086644, 'effect_size': 2.2701377982054178, 'test_result': Ttest_indResult(statistic=7.9681513334901224, pvalue=9.6399894615656076e-10)}

('swipe', 1) vs ('swipe', 2)

{'N': 56, 'effect_size': 0.0019126554032515141, 'n1': 28, 'test_result': WilcoxonResult(statistic=3.0, pvalue=5.2564133258508337e-06), 'n2': 28}

('swipe', 1) vs ('swipe', 3)

{'n1': 28, 'N': 56, 'n2': 28, 'df': 27, 'effect_size': 3.48605592254847, 'test_result': Ttest_relResult(statistic=13.043626893310529, pvalue=3.5969964456561358e-13)}

('swipe', 1) vs ('swipe', 4)

{'n1': 28, 'N': 56, 'n2': 28, 'df': 27, 'effect_size': 3.8799222428390125, 'test_result': Ttest_relResult(statistic=14.517339720027108, pvalue=2.8328302970398919e-14)}

('swipe', 1) vs ('swipe', 5)

{'n1': 28, 'N': 56, 'n2': 28, 'df': 27, 'effect_size': 4.59689191245020001, 'test_result': Ttest_relResult(statistic=17.199994580420682, pvalue=4.4867434987762781e-16)}

('swipe', 2) vs ('swipe', 3)

{'N': 56, 'effect_size': 0.01912655403251514, 'n1': 28, 'test_result': WilcoxonResult(statistic=30.0, pvalue=8.1666493089205386e-05), 'n2': 28}

('swipe', 2) vs ('swipe', 4)

{'N': 56, 'effect_size': 0.010200828817341408, 'n1': 28, 'test_result': WilcoxonResult(statistic=16.0, pvalue=2.0602777134809463e-05), 'n2': 28}

('swipe', 2) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.0031877590054191903, 'n1': 28, 'test_result': WilcoxonResult(statistic=5.0, pvalue=6.5213205645443688e-06), 'n2': 28}

('swipe', 3) vs ('swipe', 4)

{'n1': 28, 'N': 56, 'n2': 28, 'df': 27, 'effect_size': 0.56063498540060341, 'test_result': Ttest_relResult(statistic=2.0977040344080686, pvalue=0.04542748458455511)}

('swipe', 3) vs ('swipe', 5)

{'n1': 28, 'N': 56, 'n2': 28, 'df': 27, 'effect_size': 1.35619109486001301, 'test_result': Ttest_relResult(statistic=5.0744024279604449, pvalue=2.493775482784069e-05)}

('swipe', 4) vs ('swipe', 5)

{'n1': 28, 'N': 56, 'n2': 28, 'df': 27, 'effect_size': 1.1044460114084118, 'test_result': Ttest_relResult(statistic=4.1324585768793005, pvalue=0.00031147549191696151)}

Global Burger vs Swipe per tid Tests (efficiency)

burger vs swipe 1

{'n1': 110, 'N': 138, 'n2': 28, 'df': 32.196906556146352, 'effect_size': -1.9870466939513429, 'test_result': Ttest_indResult(statistic=-9.3873689639224214, pvalue=9.7956596089961892e-11)}

burger vs swipe 2

{'N': 138, 'effect_size': 0.18571428571428572, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1254.0, pvalue=0.065327534078559346), 'n2': 28}

burger vs swipe 3

{'n1': 110, 'N': 138, 'n2': 28, 'df': 55.333617103825162, 'effect_size': 1.1700510299170281, 'test_result': Ttest_indResult(statistic=5.5276510400502614, pvalue=9.0622300016681276e-07)}

burger vs swipe 4

{'n1': 110, 'N': 138, 'n2': 28, 'df': 64.460648478482284, 'effect_size': 1.7700005632660121, 'test_result': Ttest_indResult(statistic=8.3619818317844903, pvalue=7.0554228434676112e-12)}

burger vs swipe 5

{'n1': 110, 'N': 138, 'n2': 28, 'df': 80.786408371513843, 'effect_size': 2.8251881603681546, 'test_result': Ttest_indResult(statistic=13.346985621733216, pvalue=3.9194832679581521e-22)}

Global Burger vs Global Swipe Test (efficiency)

burger vs swipe

{'N': 250, 'effect_size': 0.2218181818181818, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=5992.0, pvalue=0.0013125763723938479), 'n2': 140}

Effectiveness by Tasks

Descriptions (effectiveness)

Global Descriptions (effectiveness)

burger

	effectiveness
count	110.0
mean	0.978181818182
std	0.0626360071457
min	0.8

	effectiveness
25%	1.0
50%	1.0
75%	1.0
max	1.0

shapiro
(0.3595287799835205, 8.873730593883483e-20)

swipe

	effectiveness
count	140.0
mean	0.934285714286
std	0.105783427849
min	0.6
25%	0.8
50%	1.0
75%	1.0
max	1.0

shapiro
(0.6147457361221313, 1.3754389831214409e-17)

Repeated measures (effectiveness)

burger

KruskalResult(statistic=4.2636054421768179, pvalue=0.37150463698880992)
FriedmanchisquareResult(statistic=5.1111111111109082, pvalue=0.276085623834601)

swipe

KruskalResult(statistic=8.4325646925437621, pvalue=0.076957851331098878)
FriedmanchisquareResult(statistic=8.7192429022081477, pvalue=0.068513251264267688)

Descriptions per tid (effectiveness)

('burger', 1)

	effectiveness
count	22.0
mean	0.990909090909
std	0.0426401432711
min	0.8
25%	1.0
50%	1.0
75%	1.0
max	1.0

shapiro
(0.22147256135940552, 7.41695094230721e-10)

('burger', 2)

	effectiveness
count	22.0
mean	0.963636363636
std	0.0789542033952
min	0.8
25%	1.0
50%	1.0
75%	1.0
max	1.0

shapiro
(0.4735521674156189, 7.489492048762258e-08)

('burger', 3)

	effectiveness
count	22.0
mean	0.963636363636
std	0.0789542033952
min	0.8
25%	1.0
50%	1.0
75%	1.0
max	1.0

shapiro
(0.4735521674156189, 7.489492048762258e-08)

('burger', 4)

	effectiveness
count	22.0
mean	0.981818181818
std	0.0588489886336
min	0.8
25%	1.0
50%	1.0
75%	1.0
max	1.0

shapiro
(0.3322211503982544, 4.875188253095075e-09)

('burger', 5)

	effectiveness
count	22.0
mean	0.990909090909
std	0.0426401432711
min	0.8
25%	1.0
50%	1.0
75%	1.0
max	1.0

shapiro
(0.22147256135940552, 7.41695094230721e-10)

('swipe', 1)

	effectiveness
count	28.0
mean	0.978571428571
std	0.0629940788349
min	0.8

	effectiveness
25%	1.0
50%	1.0
75%	1.0
max	1.0

shapiro
(0.36062484979629517, 5.463860475174442e-10)

('swipe', 2)

	effectiveness
count	28.0
mean	0.935714285714
std	0.0951189731211
min	0.8
25%	0.8
50%	1.0
75%	1.0
max	1.0

shapiro
(0.5905900597572327, 1.1246834219491575e-07)

('swipe', 3)

	effectiveness
count	28.0
mean	0.892857142857
std	0.138586973437
min	0.6
25%	0.8
50%	1.0
75%	1.0
max	1.0

shapiro
(0.7237528562545776, 6.2850517679180484e-06)

('swipe', 4)

	effectiveness
count	28.0
mean	0.942857142857
std	0.0920087412456
min	0.8
25%	0.8
50%	1.0
75%	1.0
max	1.0

shapiro
(0.5682951211929321, 6.229736015939125e-08)

('swipe', 5)

	effectiveness
count	28.0
mean	0.921428571429
std	0.113389341903
min	0.6
25%	0.8
50%	1.0
75%	1.0
max	1.0

shapiro
(0.6656765341758728, 9.664669278208748e-07)

Cross-compare Tests per tid (effectiveness)

('burger', 1) vs ('burger', 2)

{'N': 44, 'effect_size': 0.0030975735673722249, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=3.0, pvalue=0.17971249487899976), 'n2': 22}

('burger', 1) vs ('burger', 3)

{'N': 44, 'effect_size': 0.0030975735673722249, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=3.0, pvalue=0.17971249487899976), 'n2': 22}

('burger', 1) vs ('burger', 4)

{'N': 44, 'effect_size': 0.0020650490449148169, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=2.0, pvalue=0.5637028616507731), 'n2': 22}

('burger', 1) vs ('burger', 5)

{'N': 44, 'effect_size': '=== All pairs were equal ===', 'n1': 22, 'test_result': '=== All pairs were equal ===', 'n2': 22}

('burger', 1) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.061688311688311681, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=289.0, pvalue=0.22085511431458626), 'n2': 28}

('burger', 1) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.27597402597402598, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=223.0, pvalue=0.0085809342731982628), 'n2': 28}

('burger', 1) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.38798701298701299, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=188.5, pvalue=0.0011982167922993706), 'n2': 28}

('burger', 1) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.24025974025974028, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=234.0, pvalue=0.015452252565939647), 'n2': 28}

('burger', 1) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.31331168831168832, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=211.5, pvalue=0.0045566881958452573), 'n2': 28}

('burger', 2) vs ('burger', 3)

{'N': 44, 'effect_size': 0.0051626226122870418, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=5.0, pvalue=1.0), 'n2': 22}

('burger', 2) vs ('burger', 4)

{'N': 44, 'effect_size': 0.0, 'n1': 22, 'test_result': WilcoxonResult(statistic=0.0, pvalue=0.15729920705028502), 'n2': 22}

('burger', 2) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0030975735673722249, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=3.0, pvalue=0.17971249487899976), 'n2': 22}

('burger', 2) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.074675324675324672, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=285.0, pvalue=0.23222527082050248), 'n2': 28}

('burger', 2) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.13961038961038963, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=265.0, pvalue=0.13717816505985114), 'n2': 28}

('burger', 2) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.26623376623376627, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=226.0, pvalue=0.025658789178159933), 'n2': 28}

('burger', 2) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.10389610389610393, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=276.0, pvalue=0.20268150101021792), 'n2': 28}

('burger', 2) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.18181818181818177, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=252.0, pvalue=0.082343202897603662), 'n2': 28}

('burger', 3) vs ('burger', 4)

{'N': 44, 'effect_size': 0.0025813113061435209, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=2.5, pvalue=0.31731050786291415), 'n2': 22}

('burger', 3) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0030975735673722249, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=3.0, pvalue=0.17971249487899976), 'n2': 22}

('burger', 3) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.074675324675324672, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=285.0, pvalue=0.23222527082050248), 'n2': 28}

('burger', 3) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.13961038961038963, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=265.0, pvalue=0.13717816505985114), 'n2': 28}

('burger', 3) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.26623376623376627, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=226.0, pvalue=0.025658789178159933), 'n2': 28}

('burger', 3) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.10389610389610393, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=276.0, pvalue=0.20268150101021792), 'n2': 28}

('burger', 3) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.18181818181818177, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=252.0, pvalue=0.082343202897603662), 'n2': 28}

('burger', 4) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0020650490449148169, 'n1': 22, 'test_result': WilcoxonResult(statistic=2.0, pvalue=0.5637028616507731), 'n2': 22}

('burger', 4) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.016233766233766267, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=303.0, pvalue=0.43281068947535356), 'n2': 28}

('burger', 4) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.23051948051948057, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=237.0, pvalue=0.027429809187369383), 'n2': 28}

('burger', 4) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.34740259740259738, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=201.0, pvalue=0.0040041913682163349), 'n2': 28}

('burger', 4) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.19480519480519476, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=248.0, pvalue=0.046661220530755103), 'n2': 28}

('burger', 4) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.26948051948051943, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=225.0, pvalue=0.014890923602395365), 'n2': 28}

('burger', 5) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.061688311688311681, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=289.0, pvalue=0.22085511431458626), 'n2': 28}

('burger', 5) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.27597402597402598, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=223.0, pvalue=0.0085809342731982628), 'n2': 28}

('burger', 5) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.38798701298701299, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=188.5, pvalue=0.0011982167922993706), 'n2': 28}

('burger', 5) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.24025974025974028, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=234.0, pvalue=0.015452252565939647), 'n2': 28}

('burger', 5) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.31331168831168832, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=211.5, pvalue=0.0045566881958452573), 'n2': 28}

('swipe', 1) vs ('swipe', 2)

{'N': 56, 'effect_size': 0.0028689831048772712, 'n1': 28, 'test_result': WilcoxonResult(statistic=4.5, pvalue=0.033894853524689246), 'n2': 28}

('swipe', 1) vs ('swipe', 3)

{'N': 56, 'effect_size': 0.0031877590054191903, 'n1': 28, 'test_result': WilcoxonResult(statistic=5.0, pvalue=0.0050991474349813982), 'n2': 28}

('swipe', 1) vs ('swipe', 4)

{'N': 56, 'effect_size': 0.011475932419509085, 'n1': 28, 'test_result': WilcoxonResult(statistic=18.0, pvalue=0.13166801602281422), 'n2': 28}

('swipe', 1) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.0070130698119222189, 'n1': 28, 'test_result': WilcoxonResult(statistic=11.0, pvalue=0.032509444645719511), 'n2': 28}

('swipe', 2) vs ('swipe', 3)

{'N': 56, 'effect_size': 0.01912655403251514, 'n1': 28, 'test_result': WilcoxonResult(statistic=30.0, pvalue=0.13458487139107694), 'n2': 28}

('swipe', 2) vs ('swipe', 4)

{'N': 56, 'effect_size': 0.026777175645521199, 'n1': 28, 'test_result': WilcoxonResult(statistic=42.0, pvalue=0.7815112949987133), 'n2': 28}

('swipe', 2) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.033471469556901501, 'n1': 28, 'test_result': WilcoxonResult(statistic=52.5, pvalue=0.63735188823393707), 'n2': 28}

('swipe', 3) vs ('swipe', 4)

{'N': 56, 'effect_size': 0.022314313037934332, 'n1': 28, 'test_result': WilcoxonResult(statistic=35.0, pvalue=0.068594778422537167), 'n2': 28}

('swipe', 3) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.036978004462862604, 'n1': 28, 'test_result': WilcoxonResult(statistic=58.0, pvalue=0.35511621808512916), 'n2': 28}

('swipe', 4) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.01912655403251514, 'n1': 28, 'test_result': WilcoxonResult(statistic=30.0, pvalue=0.43857802608099983), 'n2': 28}

Global Burger vs Swipe per tid Tests (effectiveness)

burger vs swipe 1

{'N': 138, 'effect_size': 0.0019480519480519209, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1537.0, pvalue=0.49020683242704011), 'n2': 28}

burger vs swipe 2

{'N': 138, 'effect_size': 0.21233766233766238, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1213.0, pvalue=0.0027313254754476467), 'n2': 28}

burger vs swipe 3

{'N': 138, 'effect_size': 0.33116883116883122, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1030.0, pvalue=2.0615949541882224e-05), 'n2': 28}

burger vs swipe 4

{'N': 138, 'effect_size': 0.17662337662337657, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1268.0, pvalue=0.0092023144768541426), 'n2': 28}

burger vs swipe 5

{'N': 138, 'effect_size': 0.25194805194805192, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1152.0, pvalue=0.00061159598135044442), 'n2': 28}

Global Burger vs Global Swipe Test (effectiveness)

burger vs swipe

{'N': 250, 'effect_size': 0.19402597402597399, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=6206.0, pvalue=0.00011462735661581992), 'n2': 140}

Task Questionnaires

Task Question 0

Descriptions (result)

Global Descriptions (result)

burger

	result
count	110.0
mean	6.90909090909
std	0.395976427467
min	4.0
25%	7.0
50%	7.0

	result
75%	7.0
max	7.0

shapiro
(0.24518823623657227, 2.9252628439826945e-21)

swipe

	result
count	140.0
mean	6.83571428571
std	0.458504203722
min	5.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro
(0.39919018745422363, 1.5329055243220379e-21)

Repeated measures (result)

burger

KruskalResult(statistic=2.4526192106750853, pvalue=0.65313967433502973)
FriedmanchisquareResult(statistic=3.3103448275862144, pvalue=0.50729488262873967)

swipe

KruskalResult(statistic=1.7694225721785437, pvalue=0.77807166799688021)
FriedmanchisquareResult(statistic=5.0958904109588801, pvalue=0.27759929640181424)

Descriptions per tid (result)

('burger', 1)

	result
count	22.0
mean	7.0
std	0.0
min	7.0
25%	7.0

	result
50%	7.0
75%	7.0
max	7.0

shapiro
(1.0, 1.0)

('burger', 2)

	result
count	22.0
mean	6.90909090909
std	0.294244943168
min	6.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro
(0.3322211503982544, 4.875188253095075e-09)

('burger', 3)

	result
count	22.0
mean	6.77272727273
std	0.751621623515
min	4.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro
(0.3419651389122009, 5.8100124711302215e-09)

('burger', 4)

	result
count	22.0

	result
mean	6.90909090909
std	0.294244943168
min	6.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro
(0.3322211503982544, 4.875188253095075e-09)

('burger', 5)

	result
count	22.0
mean	6.95454545455
std	0.213200716356
min	6.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro
(0.22147256135940552, 7.41695094230721e-10)

('swipe', 1)

	result
count	28.0
mean	6.85714285714
std	0.448395139423
min	5.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro
(0.365678608417511, 6.050620560138498e-10)

('swipe', 2)

	result
count	28.0
mean	6.92857142857
std	0.262265264156
min	6.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro
(0.2873581051826477, 1.3197647141804936e-10)

('swipe', 3)

	result
count	28.0
mean	6.82142857143
std	0.475594865606
min	5.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro
(0.4325317740403687, 2.463778070449507e-09)

('swipe', 4)

	result
count	28.0
mean	6.82142857143
std	0.475594865606
min	5.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro

(0.43253177404403687, 2.463778070449507e-09)

('swipe', 5)

	result
count	28.0
mean	6.75
std	0.585314097381
min	5.0
25%	7.0
50%	7.0
75%	7.0
max	7.0

shapiro

(0.48425883054733276, 7.892020370547925e-09)

Cross-compare Tests per tid (result)

('burger', 1) vs ('burger', 2)

{'N': 44, 'effect_size': 0.0, 'n1': 22, 'test_result': WilcoxonResult(statistic=0.0, pvalue=0.15729920705028502), 'n2': 22}

('burger', 1) vs ('burger', 3)

{'N': 44, 'effect_size': 0.0, 'n1': 22, 'test_result': WilcoxonResult(statistic=0.0, pvalue=0.17971249487899976), 'n2': 22}

('burger', 1) vs ('burger', 4)

{'N': 44, 'effect_size': 0.0, 'n1': 22, 'test_result': WilcoxonResult(statistic=0.0, pvalue=0.15729920705028502), 'n2': 22}

('burger', 1) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0, 'n1': 22, 'test_result': WilcoxonResult(statistic=0.0, pvalue=0.31731050786291415), 'n2': 22}

('burger', 1) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.1071428571428571, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=275.0, pvalue=0.061389171314485569), 'n2': 28}

('burger', 1) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.071428571428571397, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=286.0, pvalue=0.10790037602663682), 'n2': 28}

('burger', 1) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.1428571428571429, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=264.0, pvalue=0.035323810007342034), 'n2': 28}

('burger', 1) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.1428571428571429, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=264.0, pvalue=0.035323810007342034), 'n2': 28}

('burger', 1) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.1785714285714286, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=253.0, pvalue=0.020341356769343476), 'n2': 28}

('burger', 2) vs ('burger', 3)

{'N': 44, 'effect_size': 0.0030975735673722249, 'n1': 22, 'test_result': WilcoxonResult(statistic=3.0, pvalue=0.46145098783336069), 'n2': 22}

('burger', 2) vs ('burger', 4)

{'N': 44, 'effect_size': 0.0051626226122870418, 'n1': 22, 'test_result': WilcoxonResult(statistic=5.0, pvalue=1.0), 'n2': 22}

('burger', 2) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0020650490449148169, 'n1': 22, 'test_result': WilcoxonResult(statistic=2.0, pvalue=0.5637028616507731), 'n2': 22}

('burger', 2) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.019480519480519431, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=302.0, pvalue=0.41814383343092509), 'n2': 28}

('burger', 2) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.019480519480519431, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=302.0, pvalue=0.40954587077471732), 'n2': 28}

('burger', 2) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.055194805194805241, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=291.0, pvalue=0.28360268156813595), 'n2': 28}

('burger', 2) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.055194805194805241, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=291.0, pvalue=0.28360268156813595), 'n2': 28}

('burger', 2) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.094155844155844104, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=279.0, pvalue=0.1776214834950835), 'n2': 28}

('burger', 3) vs ('burger', 4)

{'N': 44, 'effect_size': 0.0015487867836861124, 'n1': 22, 'test_result': WilcoxonResult(statistic=1.5, pvalue=0.41421617824252521), 'n2': 22}

('burger', 3) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0, 'n1': 22, 'test_result': WilcoxonResult(statistic=0.0, pvalue=0.17971249487899976), 'n2': 22}

('burger', 3) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.008116883116883078, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=305.5, pvalue=0.47007151426311133), 'n2': 28}

('burger', 3) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.025974025974025983, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=300.0, pvalue=0.37768095297605236), 'n2': 28}

('burger', 3) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.040584415584415612, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=295.5, pvalue=0.3388315325050939), 'n2': 28}

('burger', 3) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.040584415584415612, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=295.5, pvalue=0.3388315325050939), 'n2': 28}

('burger', 3) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.074675324675324672, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=285.0, pvalue=0.23293475501797717), 'n2': 28}

('burger', 4) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0, 'n1': 22, 'test_result': WilcoxonResult(statistic=0.0, pvalue=0.31731050786291415), 'n2': 22}

('burger', 4) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.019480519480519431, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=302.0, pvalue=0.41814383343092509), 'n2': 28}

('burger', 4) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.019480519480519431, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=302.0, pvalue=0.40954587077471732), 'n2': 28}

('burger', 4) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.055194805194805241, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=291.0, pvalue=0.28360268156813595), 'n2': 28}

('burger', 4) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.055194805194805241, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=291.0, pvalue=0.28360268156813595), 'n2': 28}

('burger', 4) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.094155844155844104, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=279.0, pvalue=0.1776214834950835), 'n2': 28}

('burger', 5) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.063311688311688319, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=288.5, pvalue=0.21488485789583234), 'n2': 28}

('burger', 5) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.025974025974025983, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=300.0, pvalue=0.36081607462259746), 'n2': 28}

('burger', 5) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.099025974025974017, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=277.5, pvalue=0.12983938884427548), 'n2': 28}

('burger', 5) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.099025974025974017, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=277.5, pvalue=0.12983938884427548), 'n2': 28}

('burger', 5) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.13636363636363635, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=266.0, pvalue=0.07519977300947886), 'n2': 28}

('swipe', 1) vs ('swipe', 2)

{'N': 56, 'effect_size': 0.00095632770162575704, 'n1': 28, 'test_result': WilcoxonResult(statistic=1.5, pvalue=0.41421617824252521), 'n2': 28}

('swipe', 1) vs ('swipe', 3)

{'N': 56, 'effect_size': 0.0012751036021676761, 'n1': 28, 'test_result': WilcoxonResult(statistic=2.0, pvalue=0.5637028616507731), 'n2': 28}

('swipe', 1) vs ('swipe', 4)

{'N': 56, 'effect_size': 0.0012751036021676761, 'n1': 28, 'test_result': WilcoxonResult(statistic=2.0, pvalue=0.5637028616507731), 'n2': 28}

('swipe', 1) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.0, 'n1': 28, 'test_result': WilcoxonResult(statistic=0.0, pvalue=0.083264516663550406), 'n2': 28}

('swipe', 2) vs ('swipe', 3)

{'N': 56, 'effect_size': 0.0012751036021676761, 'n1': 28, 'test_result': WilcoxonResult(statistic=2.0, pvalue=0.25683925795785656), 'n2': 28}

('swipe', 2) vs ('swipe', 4)

{'N': 56, 'effect_size': 0.0012751036021676761, 'n1': 28, 'test_result': WilcoxonResult(statistic=2.0, pvalue=0.25683925795785656), 'n2': 28}

('swipe', 2) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.0, 'n1': 28, 'test_result': WilcoxonResult(statistic=0.0, pvalue=0.058781721355358862), 'n2': 28}

('swipe', 3) vs ('swipe', 4)

{'N': 56, 'effect_size': '=== All pairs were equal ===', 'n1': 28, 'test_result': '=== All pairs were equal ===', 'n2': 28}

('swipe', 3) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.00095632770162575704, 'n1': 28, 'test_result': WilcoxonResult(statistic=1.5, pvalue=0.41421617824252521), 'n2': 28}

('swipe', 4) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.00095632770162575704, 'n1': 28, 'test_result': WilcoxonResult(statistic=1.5, pvalue=0.41421617824252521), 'n2': 28}

Global Burger vs Swipe per tid Tests (result)

burger vs swipe 1

{'N': 138, 'effect_size': 0.043506493506493493, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1473.0, pvalue=0.21665236926243431), 'n2': 28}

burger vs swipe 2

{'N': 138, 'effect_size': 0.0064935064935064402, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1530.0, pvalue=0.45320928415997419), 'n2': 28}

burger vs swipe 3

{'N': 138, 'effect_size': 0.078571428571428625, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1419.0, pvalue=0.087083010808927386), 'n2': 28}

burger vs swipe 4

{'N': 138, 'effect_size': 0.078571428571428625, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=1419.0, pvalue=0.087083010808927386), 'n2': 28}

burger vs swipe 5

{'N': 138, 'effect_size': 0.11558441558441557, 'n1': 110, 'test_result': Mannwhitneyu Result(statistic=1362.0, pvalue=0.027199345369874211), 'n2': 28}

Global Burger vs Global Swipe Test (result)

burger vs swipe

{'N': 250, 'effect_size': 0.064545454545454573, 'n1': 110, 'test_result': MannwhitneyuResult(statistic=7203.0, pvalue=0.046318608676750285), 'n2': 140}

Task Question 1

Descriptions (result)

Global Descriptions (result)

burger

	result
count	110.0
mean	1.89090909091
std	1.80897585981
min	1.0
25%	1.0
50%	1.0
75%	1.0
max	7.0

shapiro
(0.5440710783004761, 6.783648646543276e-17)

swipe

	result
count	140.0
mean	2.86428571429
std	2.12964925773
min	1.0
25%	1.0
50%	2.0
75%	4.0

	result
max	7.0

shapiro
(0.799676775932312, 1.4816165872302833e-12)

Repeated measures (result)

burger

KruskalResult(statistic=0.78069084963312274, pvalue=0.94101782074422269)
FriedmanchisquareResult(statistic=2.7575757575757125, pvalue=0.59917784877228941)

swipe

KruskalResult(statistic=2.0615941350657225, pvalue=0.72443103796977781)
FriedmanchisquareResult(statistic=5.4968553459119409, pvalue=0.24000603548291879)

Descriptions per tid (result)

('burger', 1)

	result
count	22.0
mean	1.95454545455
std	2.01133153544
min	1.0
25%	1.0
50%	1.0
75%	1.0
max	7.0

shapiro
(0.5299234390258789, 2.541320327509311e-07)

('burger', 2)

	result
count	22.0
mean	1.77272727273
std	1.87545088374
min	1.0
25%	1.0
50%	1.0

	result
75%	1.0
max	7.0

shapiro

(0.4611632227897644, 5.790687396256544e-08)

('burger', 3)

	result
count	22.0
mean	2.0
std	1.74574312189
min	1.0
25%	1.0
50%	1.0
75%	2.0
max	6.0

shapiro

(0.6260440349578857, 2.5660463052190607e-06)

('burger', 4)

	result
count	22.0
mean	1.77272727273
std	1.54092792643
min	1.0
25%	1.0
50%	1.0
75%	1.0
max	6.0

shapiro

(0.5682213306427002, 6.146745477053628e-07)

('burger', 5)

	result
count	22.0
mean	1.95454545455

	result
std	1.98751514465
min	1.0
25%	1.0
50%	1.0
75%	1.0
max	7.0

shapiro
(0.5327657461166382, 2.7092326604361006e-07)

('swipe', 1)

	result
count	28.0
mean	2.75
std	2.36682315602
min	1.0
25%	1.0
50%	1.0
75%	4.25
max	7.0

shapiro
(0.7217938303947449, 5.8795612858375534e-06)

('swipe', 2)

	result
count	28.0
mean	2.67857142857
std	2.21198036674
min	1.0
25%	1.0
50%	1.0
75%	4.0
max	7.0

shapiro
(0.7506808042526245, 1.617231646378059e-05)

('swipe', 3)

	result
count	28.0
mean	2.82142857143
std	2.16116517662
min	1.0
25%	1.0
50%	2.0
75%	4.0
max	7.0

shapiro
(0.7865198850631714, 6.232791929505765e-05)

('swipe', 4)

	result
count	28.0
mean	2.85714285714
std	1.87999774851
min	1.0
25%	1.0
50%	3.0
75%	4.0
max	7.0

shapiro
(0.8642818927764893, 0.0018409639596939087)

('swipe', 5)

	result
count	28.0
mean	3.21428571429
std	2.11445015806
min	1.0
25%	1.0
50%	3.0
75%	4.0
max	7.0

shapiro
(0.8491970896720886, 0.0009006079635582864)

Cross-compare Tests per tid (result)

('burger', 1) vs ('burger', 2)

{'N': 44, 'effect_size': 0.0077439339184305631, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=7.5, pvalue=1.0), 'n2': 22}

('burger', 1) vs ('burger', 3)

{'N': 44, 'effect_size': 0.014455343314403717, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=14.0, pvalue=0.56869370493349436), 'n2': 22}

('burger', 1) vs ('burger', 4)

{'N': 44, 'effect_size': 0.0061951471347444498, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=6.0, pvalue=0.68027954733445029), 'n2': 22}

('burger', 1) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0051626226122870418, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=5.0, pvalue=1.0), 'n2': 22}

('burger', 1) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.1964285714285714, 'n1': 22, 'test_result': Mannwhitneyu-Result(statistic=247.5, pvalue=0.082098002975044604), 'n2': 28}

('burger', 1) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.21590909090909094, 'n1': 22, 'test_result': Mannwhitneyu-Result(statistic=241.5, pvalue=0.066396878662638464), 'n2': 28}

('burger', 1) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.30681818181818177, 'n1': 22, 'test_result': Mannwhitneyu-Result(statistic=213.5, pvalue=0.020092875062028004), 'n2': 28}

('burger', 1) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.35551948051948057, 'n1': 22, 'test_result': Mannwhitneyu-Result(statistic=198.5, pvalue=0.010019521264436585), 'n2': 28}

('burger', 1) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.37662337662337664, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=192.0, pvalue=0.0068101408106697112), 'n2': 28}

('burger', 2) vs ('burger', 3)

{'N': 44, 'effect_size': 0.0067114093959731542, 'n1': 22, 'test_result': WilcoxonResult(statistic=6.5, pvalue=0.39510806859049219), 'n2': 22}

('burger', 2) vs ('burger', 4)

{'N': 44, 'effect_size': 0.010841507485802787, 'n1': 22, 'test_result': WilcoxonResult(statistic=10.5, pvalue=1.0), 'n2': 22}

('burger', 2) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0092927207021166747, 'n1': 22, 'test_result': WilcoxonResult(statistic=9.0, pvalue=0.73888268036352733), 'n2': 22}

('burger', 2) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.24512987012987009, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=232.5, pvalue=0.038182542965196922), 'n2': 28}

('burger', 2) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.2678571428571429, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=225.5, pvalue=0.028699028147674787), 'n2': 28}

('burger', 2) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.36850649350649356, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=194.5, pvalue=0.0062373933525989578), 'n2': 28}

('burger', 2) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.41720779220779225, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=179.5, pvalue=0.0028888514521789059), 'n2': 28}

('burger', 2) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.43831168831168832, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=173.0, pvalue=0.001845925801493757), 'n2': 28}

('burger', 3) vs ('burger', 4)

{'N': 44, 'effect_size': 0.0092927207021166747, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=9.0, pvalue=0.3885437838475907), 'n2': 22}

('burger', 3) vs ('burger', 5)

{'N': 44, 'effect_size': 0.013422818791946308, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=13.0, pvalue=0.86456930168674195), 'n2': 22}

('burger', 3) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.15422077922077926, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=260.5, pvalue=0.14603135541294709), 'n2': 28}

('burger', 3) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.16883116883116878, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=256.0, pvalue=0.12750985422970523), 'n2': 28}

('burger', 3) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.25324675324675328, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=230.0, pvalue=0.049115891184390158), 'n2': 28}

('burger', 3) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.30194805194805197, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=215.0, pvalue=0.026326679220802538), 'n2': 28}

('burger', 3) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.3392857142857143, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=203.5, pvalue=0.014613622667340618), 'n2': 28}

('burger', 4) vs ('burger', 5)

{'N': 44, 'effect_size': 0.0015487867836861124, 'n1': 22, 'test_result': Wilcoxon-Result(statistic=1.5, pvalue=0.19364643126922065), 'n2': 22}

('burger', 4) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.22564935064935066, 'n1': 22, 'test_result': Mannwhit-neyuResult(statistic=238.5, pvalue=0.054909704407618581), 'n2': 28}

('burger', 4) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.24350649350649356, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=233.0, pvalue=0.044870412680933683), 'n2': 28}

('burger', 4) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.3214285714285714, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=209.0, pvalue=0.015775210433546256), 'n2': 28}

('burger', 4) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.375, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=192.5, pvalue=0.0070352388832014452), 'n2': 28}

('burger', 4) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.40422077922077926, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=183.5, pvalue=0.0040067153811422793), 'n2': 28}

('burger', 5) vs ('swipe', 1)

{'N': 50, 'effect_size': 0.20129870129870131, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=246.0, pvalue=0.077014874525015403), 'n2': 28}

('burger', 5) vs ('swipe', 2)

{'N': 50, 'effect_size': 0.2191558441558441, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=240.5, pvalue=0.063535812872022673), 'n2': 28}

('burger', 5) vs ('swipe', 3)

{'N': 50, 'effect_size': 0.31331168831168832, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=211.5, pvalue=0.01809715117525822), 'n2': 28}

('burger', 5) vs ('swipe', 4)

{'N': 50, 'effect_size': 0.35551948051948057, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=198.5, pvalue=0.010033737896491264), 'n2': 28}

('burger', 5) vs ('swipe', 5)

{'N': 50, 'effect_size': 0.38149350649350644, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=190.5, pvalue=0.0062419441538161761), 'n2': 28}

('swipe', 1) vs ('swipe', 2)

{'N': 56, 'effect_size': 0.032196365954733824, 'n1': 28, 'test_result': Wilcoxon-Result(statistic=50.5, pvalue=0.89924291781309873), 'n2': 28}

('swipe', 1) vs ('swipe', 3)

{'N': 56, 'effect_size': 0.020720433535224736, 'n1': 28, 'test_result': Wilcoxon-Result(statistic=32.5, pvalue=0.34939652545601385), 'n2': 28}

('swipe', 1) vs ('swipe', 4)

{'N': 56, 'effect_size': 0.025820847943895442, 'n1': 28, 'test_result': Wilcoxon-Result(statistic=40.5, pvalue=0.44742990778151448), 'n2': 28}

('swipe', 1) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.021676761236850493, 'n1': 28, 'test_result': Wilcoxon-Result(statistic=34.0, pvalue=0.13211241836284676), 'n2': 28}

('swipe', 2) vs ('swipe', 3)

{'N': 56, 'effect_size': 0.01912655403251514, 'n1': 28, 'test_result': WilcoxonResult(statistic=30.0, pvalue=0.4727619557115964), 'n2': 28}

('swipe', 2) vs ('swipe', 4)

{'N': 56, 'effect_size': 0.042715970672617148, 'n1': 28, 'test_result': Wilcoxon-Result(statistic=67.0, pvalue=0.6485210682667949), 'n2': 28}

('swipe', 2) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.025183296142811604, 'n1': 28, 'test_result': Wilcoxon-Result(statistic=39.5, pvalue=0.1354274987516664), 'n2': 28}

('swipe', 3) vs ('swipe', 4)

{'N': 56, 'effect_size': 0.038253108065030281, 'n1': 28, 'test_result': Wilcoxon-Result(statistic=60.0, pvalue=0.66730491249962687), 'n2': 28}

('swipe', 3) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.016576346828179791, 'n1': 28, 'test_result': Wilcoxon-Result(statistic=26.0, pvalue=0.16753962672004419), 'n2': 28}

('swipe', 4) vs ('swipe', 5)

{'N': 56, 'effect_size': 0.016576346828179791, 'n1': 28, 'test_result': Wilcoxon-Result(statistic=26.0, pvalue=0.30026522383277554), 'n2': 28}

Global Burger vs Swipe per tid Tests (result)

burger vs swipe 1

{'N': 138, 'effect_size': 0.20454545454545459, 'n1': 110, 'test_result': Mannwhitneyu-Result(statistic=1225.0, pvalue=0.017143625211004959), 'n2': 28}

burger vs swipe 2

{'N': 138, 'effect_size': 0.22305194805194806, 'n1': 110, 'test_result': Mannwhitneyu-Result(statistic=1196.5, pvalue=0.011075983661422355), 'n2': 28}

burger vs swipe 3

{'N': 138, 'effect_size': 0.31266233766233764, 'n1': 110, 'test_result': Mannwhitneyu-Result(statistic=1058.5, pvalue=0.00087828638876744818), 'n2': 28}

burger vs swipe 4

{'N': 138, 'effect_size': 0.36103896103896105, 'n1': 110, 'test_result': Mannwhitneyu-Result(statistic=984.0, pvalue=0.00018652482417813029), 'n2': 28}

burger vs swipe 5

{'N': 138, 'effect_size': 0.38798701298701299, 'n1': 110, 'test_result': Mannwhitneyu-Result(statistic=942.5, pvalue=6.5526352124271008e-05), 'n2': 28}

Global Burger vs Global Swipe Test (result)

burger vs swipe

{'N': 250, 'effect_size': 0.29785714285714282, 'n1': 110, 'test_result': Mannwhitneyu-Result(statistic=5406.5, pvalue=2.9062055593999374e-06), 'n2': 140}

Final Questionnaires

Final Question 0

Just counts grouped by Results

Navigation burger answered 1 stars: 16
Navigation burger answered 2 stars: 4
Navigation burger answered 4 stars: 1
Navigation burger answered 5 stars: 1
Navigation swipe answered 1 stars: 21
Navigation swipe answered 2 stars: 4
Navigation swipe answered 3 stars: 1
Navigation swipe answered 4 stars: 1
Navigation swipe answered 7 stars: 1

0 Description

	result
count	50.0
mean	1.52
std	1.18218062089
min	1.0
25%	1.0
50%	1.0
75%	1.75
max	7.0

Descriptions (result)

Global Descriptions (result)

burger

	result
count	22.0
mean	1.5
std	1.05785047102
min	1.0
25%	1.0
50%	1.0
75%	1.75
max	5.0

shapiro
(0.5448707342147827, 3.567666624348931e-07)

swipe

	result
count	28.0
mean	1.53571428571
std	1.29048204766
min	1.0
25%	1.0
50%	1.0
75%	1.25
max	7.0

shapiro
(0.4864434003829956, 8.3034956688266e-09)

Global Burger vs Global Swipe Test (result)

burger vs swipe

{'N': 50, 'effect_size': 0.017857142857142905, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=302.5, pvalue=0.44941800310214225), 'n2': 28}

Final Question 1

Just counts grouped by Results

Navigation burger answered 1 stars: 13
Navigation burger answered 2 stars: 3
Navigation burger answered 4 stars: 1
Navigation burger answered 5 stars: 4
Navigation burger answered 6 stars: 1
Navigation swipe answered 1 stars: 17
Navigation swipe answered 2 stars: 8
Navigation swipe answered 4 stars: 2
Navigation swipe answered 6 stars: 1

1 Description

	result
count	50.0

	result
mean	1.92
std	1.49611742418
min	1.0
25%	1.0
50%	1.0
75%	2.0
max	6.0

Descriptions (result)

Global Descriptions (result)

burger

	result
count	22.0
mean	2.22727272727
std	1.79766563398
min	1.0
25%	1.0
50%	1.0
75%	3.5
max	6.0

shapiro
(0.6886584758758545, 1.4087103409110568e-05)

swipe

	result
count	28.0
mean	1.67857142857
std	1.18801332542
min	1.0
25%	1.0
50%	1.0
75%	2.0
max	6.0

shapiro

(0.6186860203742981, 2.4386196173509234e-07)

Global Burger vs Global Swipe Test (result)

burger vs swipe

{'N': 50, 'effect_size': 0.087662337662337664, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=281.0, pvalue=0.27788843237866634), 'n2': 28}

Final Question 2

Just counts grouped by Results

Navigation burger answered 1 stars: 17
Navigation burger answered 2 stars: 5
Navigation swipe answered 1 stars: 18
Navigation swipe answered 2 stars: 5
Navigation swipe answered 3 stars: 2
Navigation swipe answered 4 stars: 2
Navigation swipe answered 7 stars: 1

2 Description

	result
count	50.0
mean	1.52
std	1.09246024539
min	1.0
25%	1.0
50%	1.0
75%	2.0
max	7.0

Descriptions (result)

Global Descriptions (result)

burger

	result
count	22.0
mean	1.22727272727

	result
std	0.428932027229
min	1.0
25%	1.0
50%	1.0
75%	1.0
max	2.0

shapiro
(0.5222699642181396, 2.1416671813767607e-07)

swipe

	result
count	28.0
mean	1.75
std	1.37773297418
min	1.0
25%	1.0
50%	1.0
75%	2.0
max	7.0

shapiro
(0.6172786951065063, 2.343947329563889e-07)

Global Burger vs Global Swipe Test (result)

burger vs swipe

{'N': 50, 'effect_size': 0.17045454545454541, 'n1': 22, 'test_result': Mannwhitneyu Result(statistic=255.5, pvalue=0.10358134878107761), 'n2': 28}

Final Question 3

Just counts grouped by Results

Navigation burger answered 2 stars: 1
Navigation burger answered 3 stars: 5
Navigation burger answered 4 stars: 1
Navigation burger answered 5 stars: 4
Navigation burger answered 6 stars: 5

Navigation burger answered 7 stars: 6
Navigation swipe answered 1 stars: 1
Navigation swipe answered 2 stars: 1
Navigation swipe answered 3 stars: 3
Navigation swipe answered 4 stars: 11
Navigation swipe answered 5 stars: 5
Navigation swipe answered 6 stars: 4
Navigation swipe answered 7 stars: 3

3 Description

	result
count	50.0
mean	4.78
std	1.56869892794
min	1.0
25%	4.0
50%	5.0
75%	6.0
max	7.0

Descriptions (result)

Global Descriptions (result)

burger

	result
count	22.0
mean	5.13636363636
std	1.67034226733
min	2.0
25%	3.25
50%	5.5
75%	6.75
max	7.0

shapiro
(0.8708899021148682, 0.008132589980959892)

swipe

	result
count	28.0
mean	4.5
std	1.45296631451
min	1.0
25%	4.0
50%	4.0
75%	5.25
max	7.0

shapiro
(0.9325721859931946, 0.07159832864999771)

Global Burger vs Global Swipe Test (result)

burger vs swipe

{'N': 50, 'effect_size': 0.22564935064935066, 'n1': 22, 'test_result': MannwhitneyuResult(statistic=238.5, pvalue=0.084899251911718931), 'n2': 28}