Geniole et al 2019

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Contents

Table 1: Files downloaded for Geniole et al. (2019)

File name	MD5 Hash
archival.xlsx	121831ae1df71e0d65af787d378a9d3d
current.xlsx	649b73262123d98a3ee24d0904f2608a
drug_validation.xlsx	5a283b65b51e9da40d70955b731ed974

1 Introduction

This documents contains the reanalysis of the following paper:

Geniole, S. N., Procyshyn, T. L., Marley, N., Ortiz, T. L., Bird, B. M., Marcellus, A. L., … Carré, J. M. (2019). Using a Psychopharmacogenetic Approach To Identify the Pathways Through Which—and the People for Whom—Testosterone Promotes Aggression. *Psychological Science, 30*(4), 481–494.

Geniole et al. (2019) provided a mix of R code and SPSS code for their analyses. However, all re-analyses were performed in R. Wherever possible their original R code was used as the starting point for the re-analysis.

The analysis code is available at https://github.com/ljcolling/odp-geniole. This document is automatically built. To manually build this document, clone the git repository and run `make all`.

1.1 Data download

A total of 3 files were downloaded from https://osf.io/3jhr7. The downloaded files the MD5 hashes are shown in Table 1.

2 Drug administration

For the Drug × Time interaction we were able to reproduce the results reported in Geniole et al. (2019) ($F(4, 48) = 6.515$, $p < .001$, $\eta_p^2 = .352$). For the paired t-test we were similarly able to reproduce the results (baseline: $t(12) = 0.533$, $p = .604$; 15 min: $t(12) = 3.725$, $p = .003$; 30 min: $t(12) = 3.629$, $p = .003$; 60 min: $t(12) = 3.573$, $p = .004$; 180 min: $t(12) = 4.943$, $p < .001$). However, we were not able to reproduce the reported Cohen's d values because the standardiser (i.e., how the standard deviation was pooled) was

Table 2: Reproduction of Table 2 (Geniole et al., 2019)

Analysis and predictor of agression	b	SE	$t(110)$	p	r	d	95% CI (d)
Analysis A							
Personality-risk score	2.467	1.210	2.038	.044	.189	0.385	[0.021, 0.757]
Drug group	4.205	2.371	1.774	.079	.165	0.335	[-0.029, 0.706]
Drug group × Personality-risk score	5.589	2.360	2.368	.020	.218	0.448	[0.083, 0.822]
Analysis B							
Drug group's conditional effect at low personality-risk score	-1.384	3.200	-0.432	.666	.041	-0.082	[-0.447, 0.282]
Drug group's conditional effect at high personality-risk score	9.793	3.484	2.811	.006	.257	0.531	[0.166, 0.908]

not reported.

3 Archival data set

For the archival data set we were largely able reproduce the results in Table 2 (Geniole et al., 2019) expect for the effect size measures. The differences in the effect size measures were typically small, and are likely due to rounding differences. However, there was a more serious difference on row 4 of the table where the Cohen's d reported by Geniole et al. (2019) appears to have it's sign reversed. Our re-analysis produced a Cohen's d with the correct sign. Because of this sign error in the reporting by Geniole et al. (2019), there is also a difference in corresponding confidence interval. Our reproduction of Table 2 (Geniole et al., 2019) is shown in Table 2.

4 Current data set

Again we were largely able to reproduce the results in Table 3 (Geniole et al., 2019) except for the effect size measures. The differences in the effect size measures again slight, and is likely due to rounding differences. Our reproduction of Table 3 (Geniole et al., 2019) is shown in Table 3.

Our re-analysis was also able to reproduce the results presented in Table 4 of Geniole et al. (2019) but again with small differences in the effect sizes measures. Our reproduction of Table 4 is shown in 4

Our re-analysis was able to reproduce the results presented in Table 5 of Geniole et al. (2019) again with slight differences in the effect measures and a small difference in the final b value. Again, these are likely to reflect rounding errors.

Geniole et al. (2019) also report a number of results in the text of the section titled *Are testosterone's effects at high personality risk and low CAG repeat length explained, in part, by variation in feelings of reward or anger?*. Again, we were largely able to reproduce these expect for small different that are likely to reflect rounding errors. The orginal results and the reproduced results are listed below.

Original

1. $n = 224$, $b = 0.889$, $SE = 0.361$, $t(216) = 2.463$, $p = .015$, $r = .165$, Cohen's $d = 0.335$, 95% CI = [0.065, 0.605].

2. $n = 306$, $b = 0.207$, $SE = 0.362$, $t(298) = 0.572$, $p = .568$, $r = .033$, Cohen's $d = 0.066$, 95%CI = [−0.162, 0.294]

3. $n = 224$, $b = 7.960$, $SE = 2.201$, $t(216) = 3.617$, $p < .001$, $r = .239$, Cohen's $d = 0.492$, 95% CI = [0.220, 0.764]

4. $b = 3.940$, $SE = 2.396$, $t(212) = 1.644$, $p = .102$, $r = .112$, Cohen's $d = 0.226$, 95% CI = [−0.046, 0.498]

5. $n = 224$, $b = 4.031$, $SE = 0.946$, $t(212) = 4.260$, $p < .001$, $r = .281$, Cohen's $d = 0.585$, 95% CI = [0.308, 0.862]

Reproduced

1. $n = 224$, $b = 0.889$, $SE = 0.361$, $t(216) = 2.463$, $p = .015$, $r = .163$, Cohen's $d = 0.334$, 95% CI = [0.073,0.598]

2. $n = 306$, $b = 0.207$, $SE = 0.362$, $t(298) = 0.572$, $p = .568$, $r = .033$, Cohen's $d = 0.066$, 95% CI = [-0.157,0.290]

3. $n = 224$, $b = 7.960$, $SE = 2.201$, $t(216) = 3.617$, $p < .001$, $r = .236$, Cohen's $d = 0.490$, 95% CI = [0.228,0.757]

4. $n = 224$, $b = 3.967$, $SE = 2.350$, $t(212) = 1.688$, $p = .093$, $r = .113$, Cohen's $d = 0.231$, 95% CI = [-0.030,0.494]

5. $n = 224$, $b = 4.031$, $SE = 0.953$, $t(212) = 4.230$, $p < .001$, $r = .273$, Cohen's $d = 0.578$, 95% CI = [0.315,0.848]

`R` information

We performed our analysis on R version 4.0.0 (2020-04-24) with all packages installed from a timestamped version of MRAN (date: 2020-06-06). The following R packages were used: R Core Team (2020), Wickham, François,

Table 3: Reproduction of Table 3 (Geniole et al., 2019)

Analysis and predictor of agression	b	SE	$t(304)$	p	r	d	95% CI (d)
Analysis A							
Personality-risk score	1.733	0.631	2.745	.006	.155	0.314	[0.091, 0.539]
Drug group	2.059	1.095	1.880	.061	.107	0.215	[-0.008, 0.439]
Drug group × Personality-risk score	2.535	1.249	2.029	.043	.115	0.232	[0.009, 0.456]
Analysis B							
Drug group's conditional effect at low personality-risk score	-0.476	1.295	-0.368	.713	.021	-0.042	[-0.265, 0.181]
Drug group's conditional effect at high personality-risk score	4.594	1.960	2.343	.020	.133	0.268	[0.045, 0.493]

et al. (2020), Lawrence (2016), Wickham (2020), Wickham, Chang, et al. (2020), Müller (2017), Bache and Wickham (2014), Henry and Wickham (2020), Wickham et al. (2018), Wickham and Bryan (2019), Hester et al. (2020), Maechler et al. (2020), Lüdecke (2020), Wickham (2019a), Müller and Wickham (2020), Wickham and Henry (2020), Wickham (2019b), Wickham (2016), Todorov and Filzmoser (2009), Lüdecke (2018), Wickham et al. (2019).

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Table 4: Reproduction of Table 4 (Geniole et al., 2019)

Analysis and predictor of agression	b	SE	$t(300)$	p	r	d	95% CI (d)
Analysis A							
CAG repeat length	0.100	0.472	0.212	.832	.012	0.024	[-0.198, 0.247]
Personality-risk score	1.515	0.582	2.603	.010	.147	0.298	[0.075, 0.523]
Drug group	1.910	1.023	1.868	.063	.106	0.214	[-0.009, 0.438]
Personality-Risk Score × CAG Repeat Length	-1.081	0.500	-2.165	.031	.123	-0.248	[-0.472, -0.025]
Drug Group × CAG Repeat Length	-2.161	0.927	-2.332	.020	.132	-0.267	[-0.491, -0.044]
Drug Group × Personality-Risk Score	1.938	1.154	1.679	.094	.096	0.192	[-0.031, 0.416]
Drug Group × Personality-Risk Score × CAG Repeat Length	-2.681	1.005	-2.667	.008	.151	-0.305	[-0.530, -0.082]
Analysis B							
Drug Group × Personality-Risk Score at Low CAG Repeat Length	4.619	1.266	3.649	< .001	.204	0.417	[0.194, 0.644]
Drug Group × Personality-Risk Score at High CAG Repeat Length	-0.743	1.756	-0.423	.673	.024	-0.048	[-0.271, 0.174]
Analysis C							
Drug group's conditional effect at low CAG repeat length, low personality-risk score	-0.548	1.668	-0.328	.743	.019	-0.038	[-0.261, 0.185]
Drug group's conditional effect at low CAG repeat length, high personality-risk score	8.691	1.966	4.420	< .001	.245	0.505	[0.281, 0.734]
Drug group's conditional effect at high CAG repeat length, low personality-risk score	0.492	2.214	0.222	.824	.013	0.025	[-0.197, 0.248]
Drug group's conditional effect at high CAG repeat length, high personality-risk score	-0.994	2.333	-0.426	.670	.024	-0.049	[-0.272, 0.174]

Table 5: Reproduction of Table 5 (Geniole et al., 2019)

Analysis and predictor of agression	b	SE	$t(304)$	p	r	d	95% CI (d)
Analysis A							
CAG repeat length	0.171	0.493	0.346	.730	.020	0.040	[-0.183, 0.263]
Drug group	1.361	1.070	1.272	.204	.073	0.145	[-0.077, 0.369]
Drug group × CAG Repeat Length	-1.982	0.990	-2.002	.046	.114	-0.229	[-0.453, -0.006]
Analysis B							
Drug group's conditional effect at low CAG repeat length	3.343	1.459	2.291	.023	.130	0.262	[0.039, 0.487]
Drug group's conditional effect at high CAG repeat length	-0.621	1.456	-0.427	.670	.024	-0.049	[-0.272, 0.174]

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