

We thank members of the community for a thoughtful discussion regarding our recent publication, reported in doi: 10.1016/j.cell.2019.05.004; PMID: 31150625. In addition, we appreciate the broader comments on the gut microbiota, mouse models, and statistical analyses. We would like to address the following points raised during post-publication:

1. A number of reports, from many groups worldwide, have found differences in the human microbiome (from stool samples) between individuals with autism and typically developing populations (reviewed in PMID: 30251184, with >20 original articles). These studies in humans are unable to resolve the root cause of microbiome changes (potential examples include diet, genetics, etc.), or whether these observed differences have any biological relevance. The goal of our study is to take a next step in this line of existing research, by testing whether colonization of mice with microbiomes from individuals with autism can influence mouse behaviors, compared to controls (typically developing donors). These studies cannot be performed in people, but allow for a functional evaluation of the microbiome in mice, beyond simply reporting differences in microbial profiles. Our experiments do not, and cannot, conclude that the microbiota is causative in autism. In fact, we clearly state in the manuscript that our results do not demonstrate causality. Moreover, our work does not establish a new mouse model, which we have never claimed, but serves to test whether microbiota from ASD individuals can affect mouse behaviors.

2. It is our position that mice do not develop autism, but rather can be used to investigate mouse behaviors that are analogous to those of humans (PMID: 20559336, 27305922). Mouse models therefore enable testing of behaviors, classified by behavioral neuroscientists as being close to those behavioral domains in humans, in controlled systems. In our study, we tested outcomes that are regarded as similar to the main behavioral domains in autism, namely stereotypic/repetitive behavior and social interaction. While modeling complex behaviors in mice has limitations, this approach is a widely-accepted tool in behavioral neuroscience and has been used in hundreds of peer-reviewed publications.

3. Statistical analyses, part of Figure 1, specify linear mixed effects modeling of individual mice, nested within donor, and round of testing. Fixed effects included donor ASD diagnosis, mouse sex, and the interaction of these factors. You will note that we also ran models stratified by mouse sex, because DSI was only evident in male mice. Diagonal covariance matrices were specified so that mice sharing donors would be allowed to share variability while maintaining independence from other donors. Likewise, this was also used for testing Round. Because the number of donors was not large, more complex models specifying random effects did not converge and were not stable, and thus we decided to adhere to a parsimonious model to address our research question. We are providing the original SPSS output of the statistical analysis presented in Figures 1E – G for reference; the syntax use for analyses is included therein.

Thank you again for the constructive dialogue.

We present the original, unaltered output files of the statistical analysis used for our paper. This analysis was performed as part of a larger project, and any page breaks are due to analyses that were removed as they were never used in the paper. The analysis used to generate statistics for Figures 1E – G is shown in its entirety.

**

```
MIXED OFT_Distance BY asd_diagnosis Gender
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HCONVERGE(0,
  ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE(0.000001, ABSOLUTE)
/FIXED=asd_diagnosis gender asd_diagnosis*gender | SSTYPE(3)
/METHOD=REML
/PRINT= SOLUTION
/REPEATED=Donor | SUBJECT(Round*MouseID) COVTYPE(DIAG)
/EMMEANS=TABLES(asd_diagnosis)
/EMMEANS=TABLES(gender)
/EMMEANS=TABLES(asd_diagnosis*gender) .
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Mixed Model Analysis

Notes

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	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

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Model Dimension ^a

		Number of Levels	Covariance Structure	Number of Parameters
Fixed Effects	Intercept	1		1
	ASD_diagnosis	2		1
	Gender	2		1
	ASD_diagnosis * Gender	4		1
Repeated Effects	Donor	8	Diagonal	8
Total		17		12

Model Dimension^a

		Subject Variables	Number of Subjects
Fixed Effects	Intercept		
	ASD_diagnosis		
	Gender		
	ASD_diagnosis * Gender		
Repeated Effects	Donor	Round * MouseID	206
Total			

a. Dependent Variable: OFT_Distance.

Information Criteria^a

-2 Restricted Log Likelihood	3358.670
Akaike's Information Criterion (AIC)	3374.670
Hurvich and Tsai's Criterion (AICC)	3375.416
Bozdogan's Criterion (CAIC)	3409.136
Schwarz's Bayesian Criterion (BIC)	3401.136

The information criteria are displayed in smaller-is-better form.

a. Dependent Variable: OFT_Distance.

Fixed Effects

Type III Tests of Fixed Effects^a

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	95.967	4336.047	.000
ASD_diagnosis	1	95.967	15.346	.000
Gender	1	95.967	2.378	.126
ASD_diagnosis * Gender	1	95.967	1.871	.175

a. Dependent Variable: OFT_Distance.

Estimates of Fixed Effects^a

Parameter	Estimate	Std. Error	df	t	Sig.
Intercept	4548.34688	159.600898	55.781	28.498	.000
[ASD_diagnosis=ASD]	-346.88806	192.791760	106.968	-1.799	.075
[ASD_diagnosis=NT]	0 ^b	0	.	.	.
[Gender=Female]	395.938396	228.760007	52.059	1.731	.089
[Gender=Male]	0 ^b	0	.	.	.
[ASD_diagnosis=ASD] * [Gender=Female]	-372.24735	272.127609	95.967	-1.368	.175
[ASD_diagnosis=ASD] * [Gender=Male]	0 ^b	0	.	.	.
[ASD_diagnosis=NT] * [Gender=Female]	0 ^b	0	.	.	.
[ASD_diagnosis=NT] * [Gender=Male]	0 ^b	0	.	.	.

Estimates of Fixed Effects^a

Parameter	95% Confidence Interval	
	Lower Bound	Upper Bound
Intercept	4228.60020	4868.09355
[ASD_diagnosis=ASD]	-729.07656	35.300448
[ASD_diagnosis=NT]	.	.
[Gender=Female]	-63.089708	854.966500
[Gender=Male]	.	.
[ASD_diagnosis=ASD] * [Gender=Female]	-912.41877	167.924070
[ASD_diagnosis=ASD] * [Gender=Male]	.	.
[ASD_diagnosis=NT] * [Gender=Female]	.	.
[ASD_diagnosis=NT] * [Gender=Male]	.	.

a. Dependent Variable: OFT_Distance.

b. This parameter is set to zero because it is redundant.

Covariance Parameters

Estimates of Covariance Parameters ^a

Parameter		Estimate	Std. Error
Repeated Measures	Var: [Donor=A11-old]	1022437.01	244668.555
	Var: [Donor=A17-old]	828185.230	297273.202
	Var: [Donor=A24-new]	495748.350	116524.615
	Var: [Donor=A3-old]	1000809.26	361259.513
	Var: [Donor=A9-old]	399136.093	142047.866
	Var: [Donor=C1]	1855547.14	527324.172
	Var: [Donor=C4]	480646.263	193011.389
	Var: [Donor=N5]	1416376.44	344141.798

a. Dependent Variable: OFT_Distance.

Estimated Marginal Means

1. ASD_diagnosis^a

ASD_diagnosis	Mean	Std. Error	df	95% Confidence Interval	
				Lower Bound	Upper Bound
ASD	4213.304	73.692	103.948	4067.169	4359.440
NT	4746.316	114.380	52.059	4516.802	4975.830

a. Dependent Variable: OFT_Distance.

2. Gender^a

Gender	Mean	Std. Error	df	95% Confidence Interval	
				Lower Bound	Upper Bound
Female	4584.718	96.027	84.427	4393.771	4775.664
Male	4374.903	96.396	106.968	4183.809	4565.997

a. Dependent Variable: OFT_Distance.

3. ASD_diagnosis * Gender ^a

ASD_diagnosis	Gender	Mean	Std. Error	df	95% Confidence Interval	
					Lower Bound	Upper Bound
ASD	Female	4225.150	100.130	97.090	4026.421	4423.878
	Male	4201.459	108.149	106.603	3987.057	4415.861
NT	Female	4944.285	163.886	47.840	4614.742	5273.829
	Male	4548.347	159.601	55.781	4228.600	4868.094

a. Dependent Variable: OFT_Distance.

```

MIXED MB_buried BY asd_diagnosis Gender
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HCONVERGE(0,
  ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE(0.000001, ABSOLUTE)
/FIXED=asd_diagnosis gender asd_diagnosis*gender | SSTYPE(3)
/METHOD=REML
/PRINT= SOLUTION
/REPEATED=Donor | SUBJECT(Round*MouseID) COVTYPE(DIAG)
/EMMEANS=TABLES(asd_diagnosis)
/EMMEANS=TABLES(gender)
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Mixed Model Analysis

Notes

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	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

Syntax		<pre> MIXED MB_buried BY asd_diagnosis Gender /CRITERIA=CIN(95) MXITER(100) MXSTEP (10) SCORING(1) SINGULAR (0.000000000001) HCONVERGE(0, ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE (0.000001, ABSOLUTE) /FIXED=asd_diagnosis gender asd_diagnosis*gender SSTYPE(3) /METHOD=REML /PRINT= SOLUTION /REPEATED=Donor SUBJECT (Round*MouseID) COVTYPE(DIAG) /EMMEANS=TABLES (asd_diagnosis) /EMMEANS=TABLES (gender) /EMMEANS=TABLES (asd_diagnosis*gender) . </pre>
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Model Dimension^a

		Number of Levels	Covariance Structure	Number of Parameters
Fixed Effects	Intercept	1		1
	ASD_diagnosis	2		1
	Gender	2		1
	ASD_diagnosis * Gender	4		1
Repeated Effects	Donor	8	Diagonal	8
Total		17		12

Model Dimension^a

		Subject Variables	Number of Subjects
Fixed Effects	Intercept		
	ASD_diagnosis		
	Gender		
	ASD_diagnosis * Gender		
Repeated Effects	Donor	Round * MouseID	206
Total			

a. Dependent Variable: MB_buried.

Information Criteria^a

-2 Restricted Log Likelihood	1195.900
Akaike's Information Criterion (AIC)	1211.900
Hurvich and Tsai's Criterion (AICC)	1212.646
Bozdogan's Criterion (CAIC)	1246.366
Schwarz's Bayesian Criterion (BIC)	1238.366

The information criteria are displayed in smaller-is-better form.

a. Dependent Variable: MB_buried.

Fixed Effects

Type III Tests of Fixed Effects^a

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	169.254	515.682	.000
ASD_diagnosis	1	169.254	20.477	.000
Gender	1	169.254	5.790	.017
ASD_diagnosis * Gender	1	169.254	3.776	.054

a. Dependent Variable: MB_buried.

Estimates of Fixed Effects^a

Parameter	Estimate	Std. Error	df	t	Sig.
Intercept	4.388123	.661104	71.460	6.638	.000
[ASD_diagnosis=ASD]	4.103473	.883283	166.165	4.646	.000
[ASD_diagnosis=NT]	0 ^b	0	.	.	.
[Gender=Female]	2.759262	.982564	79.409	2.808	.006
[Gender=Male]	0 ^b	0	.	.	.
[ASD_diagnosis=ASD] * [Gender=Female]	-2.465566	1.268786	169.254	-1.943	.054
[ASD_diagnosis=ASD] * [Gender=Male]	0 ^b	0	.	.	.
[ASD_diagnosis=NT] * [Gender=Female]	0 ^b	0	.	.	.
[ASD_diagnosis=NT] * [Gender=Male]	0 ^b	0	.	.	.

Estimates of Fixed Effects^a

Parameter	95% Confidence Interval	
	Lower Bound	Upper Bound
Intercept	3.070066	5.706180
[ASD_diagnosis=ASD]	2.359569	5.847376
[ASD_diagnosis=NT]	.	.
[Gender=Female]	.803674	4.714850
[Gender=Male]	.	.
[ASD_diagnosis=ASD] * [Gender=Female]	-4.970250	.039117
[ASD_diagnosis=ASD] * [Gender=Male]	.	.
[ASD_diagnosis=NT] * [Gender=Female]	.	.
[ASD_diagnosis=NT] * [Gender=Male]	.	.

a. Dependent Variable: MB_buried.

b. This parameter is set to zero because it is redundant.

Covariance Parameters

Estimates of Covariance Parameters ^a

Parameter		Estimate	Std. Error
Repeated Measures	Var: [Donor=A11-old]	23.615756	5.806867
	Var: [Donor=A17-old]	19.594751	7.096823
	Var: [Donor=A24-new]	15.666584	3.726048
	Var: [Donor=A3-old]	20.765180	7.380410
	Var: [Donor=A9-old]	21.035824	7.705506
	Var: [Donor=C1]	15.847214	3.980358
	Var: [Donor=C4]	29.318190	10.680342
	Var: [Donor=N5]	23.188388	5.570536

a. Dependent Variable: MB_buried.

Estimated Marginal Means

1. ASD_diagnosis^a

ASD_diagnosis	Mean	Std. Error	df	95% Confidence Interval	
				Lower Bound	Upper Bound
ASD	8.638	.401	116.185	7.843	9.433
NT	5.768	.491	79.409	4.790	6.746

a. Dependent Variable: MB_buried.

2. Gender^a

Gender	Mean	Std. Error	df	95% Confidence Interval	
				Lower Bound	Upper Bound
Female	7.966	.455	161.817	7.067	8.866
Male	6.440	.442	166.165	5.568	7.312

a. Dependent Variable: MB_buried.

3. ASD_diagnosis * Gender ^a

ASD_diagnosis	Gender	Mean	Std. Error	df	95% Confidence Interval	
					Lower Bound	Upper Bound
ASD	Female	8.785	.549	107.883	7.697	9.873
	Male	8.492	.586	118.916	7.332	9.651
NT	Female	7.147	.727	81.817	5.701	8.593
	Male	4.388	.661	71.460	3.070	5.706

a. Dependent Variable: MB_buried.

**note, DSI only inmales

```
MIXED DSI_Social_durationBY asd_diagnosisGender
  /CRITERIA=CIN(95) MXITER(100) MXSTEP(10) SCORING(1) SINGULAR(0.000000000001)
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  ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE(0.000001, ABSOLUTE)
/FIXED=asd_diagnosisgender asd_diagnosis*gender | SSTYPE(3)
/METHOD=REML
/PRINT= SOLUTION
/REPEATED=Donor | SUBJECT(Round*MouseID) COVTYPE(DIAG)
/EMMEANS=TABLES(asd_diagnosis)
/EMMEANS=TABLES(gender)
/EMMEANS=TABLES(asd_diagnosis*gender) .
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Mixed Model Analysis

Notes

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	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

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Model Dimension ^a

		Number of Levels	Covariance Structure	Number of Parameters
Fixed Effects	Intercept	1		1
	ASD_diagnosis	2		1
	Gender	2		1
	ASD_diagnosis * Gender	4		1
Repeated Effects	Donor	8	Diagonal	8
Total		17		12

Model Dimension ^a

		Subject Variables	Number of Subjects
Fixed Effects	Intercept		
	ASD_diagnosis		
	Gender		
	ASD_diagnosis * Gender		
Repeated Effects	Donor	Round * MouseID	128
Total			

a. Dependent Variable: DSI_Social_duration.

Information Criteria ^a

-2 Restricted Log Likelihood	1095.691
Akaike's Information Criterion (AIC)	1111.691
Hurvich and Tsai's Criterion (AICC)	1112.943
Bozdogan's Criterion (CAIC)	1142.253
Schwarz's Bayesian Criterion (BIC)	1134.253

The information criteria are displayed in smaller-is-better form.

a. Dependent Variable: DSI_Social_duration.

Fixed Effects

Type III Tests of Fixed Effects^a

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	79.472	385.089	.000
ASD_diagnosis	1	79.472	5.854	.018
Gender	1	79.472	54.050	.000
ASD_diagnosis * Gender	1	79.472	3.024	.086

a. Dependent Variable: DSI_Social_duration.

Estimates of Fixed Effects^a

Parameter	Estimate	Std. Error	df	t	Sig.
Intercept	53.474254	3.865856	43.185	13.832	.000
[ASD_diagnosis=ASD]	-14.284772	4.768980	85.325	-2.995	.004
[ASD_diagnosis=NT]	0 ^b	0	.	.	.
[Gender=Female]	-31.227923	5.611216	40.648	-5.565	.000
[Gender=Male]	0 ^b	0	.	.	.
[ASD_diagnosis=ASD] * [Gender=Female]	11.947080	6.870206	79.472	1.739	.086
[ASD_diagnosis=ASD] * [Gender=Male]	0 ^b	0	.	.	.
[ASD_diagnosis=NT] * [Gender=Female]	0 ^b	0	.	.	.
[ASD_diagnosis=NT] * [Gender=Male]	0 ^b	0	.	.	.

Estimates of Fixed Effects^a

Parameter	95% Confidence Interval	
	Lower Bound	Upper Bound
Intercept	45.678981	61.269528
[ASD_diagnosis=ASD]	-23.766260	-4.803283
[ASD_diagnosis=NT]	.	.
[Gender=Female]	-42.562982	-19.892864
[Gender=Male]	.	.
[ASD_diagnosis=ASD] * [Gender=Female]	-1.726461	25.620620
[ASD_diagnosis=ASD] * [Gender=Male]	.	.
[ASD_diagnosis=NT] * [Gender=Female]	.	.
[ASD_diagnosis=NT] * [Gender=Male]	.	.

a. Dependent Variable: DSI_Social_duration.

b. This parameter is set to zero because it is redundant.

Covariance Parameters

Estimates of Covariance Parameters ^a

Parameter		Estimate	Std. Error
Repeated Measures	Var: [Donor=A11-old]	487.840390	174.266537
	Var: [Donor=A17-old]	229.356445	88.872164
	Var: [Donor=A24-new]	526.119738	198.881098
	Var: [Donor=A3-old]	305.287371	108.404738
	Var: [Donor=A9-old]	225.078388	83.792579
	Var: [Donor=C1]	661.655972	226.922523
	Var: [Donor=C4]	262.338446	95.136214
	Var: [Donor=N5]	382.902076	146.131922

a. Dependent Variable: DSI_Social_duration.

Estimated Marginal Means

1. ASD_diagnosis^a

ASD_diagnosis	Mean	Std. Error	df	95% Confidence Interval	
				Lower Bound	Upper Bound
ASD	29.549	1.982	67.757	25.594	33.504
NT	37.860	2.806	40.648	32.193	43.528

a. Dependent Variable: DSI_Social_duration.

2. Gender^a

Gender	Mean	Std. Error	df	95% Confidence Interval	
				Lower Bound	Upper Bound
Female	21.077	2.473	72.867	16.149	26.006
Male	46.332	2.384	85.325	41.591	51.073

a. Dependent Variable: DSI_Social_duration.

3. ASD_diagnosis * Gender ^a

ASD_diagnosis	Gender	Mean	Std. Error	df	95% Confidence Interval	
					Lower Bound	Upper Bound
ASD	Female	19.909	2.813	67.187	14.293	25.524
	Male	39.189	2.793	68.307	33.617	44.761
NT	Female	22.246	4.067	37.604	14.010	30.482
	Male	53.474	3.866	43.185	45.679	61.270

a. Dependent Variable: DSI_Social_duration.

```
sort cases by gender.
split file by gender.
```

```
MIXED OFT_Distance BY asd_diagnosis
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  ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE(0.000001, ABSOLUTE)
/FIXED=asd_diagnosis | SSTYPE(3)
/METHOD=REML
/PRINT= SOLUTION
/REPEATED=Donor | SUBJECT(Round*MouseID) COVTYPE(DIAG)
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Mixed Model Analysis

Notes

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	N of Rows in Working Data File	206
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

Syntax		MIXED OFT_Distance BY asd_diagnosis /CRITERIA=CIN(95) MXITER(100) MXSTEP (10) SCORING(1) SINGULAR (0.000000000001) HCONVERGE(0, ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE (0.000001, ABSOLUTE) /FIXED=asd_diagnosis SSTYPE(3) /METHOD=REML /PRINT= SOLUTION /REPEATED=Donor SUBJECT (Round*MouseID) COVTYPE(DIAG) /EMMEANS=TABLES (asd_diagnosis).
Resources	Processor Time	00:00:00.02
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Model Dimension ^a

Gender			Number of Levels	Covariance Structure	Number of Parameters
Female	Fixed Effects	Intercept	1		1
		ASD_diagnosis	2		1
	Repeated Effects	Donor	8	Diagonal	8
	Total		11		10
Male	Fixed Effects	Intercept	1		1
		ASD_diagnosis	2		1
	Repeated Effects	Donor	8	Diagonal	8
	Total		11		10

Model Dimension ^a

Gender			Subject Variables	Number of Subjects
Female	Fixed Effects	Intercept		
		ASD_diagnosis		
	Repeated Effects	Donor	Round * MouseID	103
	Total			
Male	Fixed Effects	Intercept		
		ASD_diagnosis		
	Repeated Effects	Donor	Round * MouseID	103
	Total			

a. Dependent Variable: OFT_Distance.

Information Criteria ^a

Female	-2 Restricted Log Likelihood	1677.051
	Akaike's Information Criterion (AIC)	1693.051
	Hurvich and Tsai's Criterion (AICC)	1694.617
	Bozdogan's Criterion (CAIC)	1721.972
	Schwarz's Bayesian Criterion (BIC)	1713.972
Male	-2 Restricted Log Likelihood	1661.368
	Akaike's Information Criterion (AIC)	1677.368
	Hurvich and Tsai's Criterion (AICC)	1678.934
	Bozdogan's Criterion (CAIC)	1706.289
	Schwarz's Bayesian Criterion (BIC)	1698.289

The information criteria are displayed in smaller-is-better form.

a. Dependent Variable: OFT_Distance.

Fixed Effects

Type III Tests of Fixed Effects^a

Gender	Source	Numerator df	Denominator df	F	Sig.
Female	Intercept	1	24.970	2728.782	.000
	ASD_diagnosis	1	24.970	27.291	.000
Male	Intercept	1	71.025	2568.799	.000
	ASD_diagnosis	1	71.025	.310	.579

a. Dependent Variable: OFT_Distance.

Estimates of Fixed Effects^a

Gender	Parameter	Estimate	Std. Error	df	t	Sig.
Female	Intercept	5140.82716	152.413208	13.618	33.730	.000
	[ASD_diagnosis=ASD]	-934.75044	178.930069	24.970	-5.224	.000
	[ASD_diagnosis=NT]	0 ^b	0	.	.	.
Male	Intercept	4236.94502	128.693008	35.066	32.923	.000
	[ASD_diagnosis=ASD]	-92.144239	165.374830	71.025	-.557	.579
	[ASD_diagnosis=NT]	0 ^b	0	.	.	.

Estimates of Fixed Effects^a

Gender	Parameter	95% Confidence Interval	
		Lower Bound	Upper Bound
Female	Intercept	4813.06981	5468.58451
	[ASD_diagnosis=ASD]	-1303.2861	-566.21479
	[ASD_diagnosis=NT]	.	.
Male	Intercept	3975.70194	4498.18810
	[ASD_diagnosis=ASD]	-421.89030	237.601821
	[ASD_diagnosis=NT]	.	.

a. Dependent Variable: OFT_Distance.

b. This parameter is set to zero because it is redundant.

Covariance Parameters

Estimates of Covariance Parameters ^a

Gender	Parameter		Estimate	Std. Error
Female	Repeated Measures	Var: [Donor=A11-old]	717954.639	255550.825
		Var: [Donor=A17-old]	644851.836	322685.811
		Var: [Donor=A24-new]	437206.844	130540.174
		Var: [Donor=A3-old]	1698963.82	859245.285
		Var: [Donor=A9-old]	366835.347	184789.135
		Var: [Donor=C1]	4055641.70	1730196.25
		Var: [Donor=C4]	276539.393	154700.394
		Var: [Donor=N5]	1792055.69	567833.175
Male	Repeated Measures	Var: [Donor=A11-old]	1307293.78	422002.140
		Var: [Donor=A17-old]	961910.495	489202.266
		Var: [Donor=A24-new]	587173.474	222902.532
		Var: [Donor=A3-old]	301410.984	157097.973
		Var: [Donor=A9-old]	427710.790	214686.507
		Var: [Donor=C1]	560561.243	234626.514
		Var: [Donor=C4]	790138.970	447076.532
		Var: [Donor=N5]	1250749.89	528300.528

a. Dependent Variable: OFT_Distance.

Estimated Marginal Means

ASD_diagnosis^a

Gender	ASD_diagnosis	Mean	Std. Error	df	95% Confidence Interval	
					Lower Bound	Upper Bound
Female	ASD	4206.077	93.735	54.265	4018.171	4393.982
	NT	5140.827	152.413	13.618	4813.070	5468.585
Male	ASD	4144.801	103.860	42.957	3935.341	4354.261
	NT	4236.945	128.693	35.066	3975.702	4498.188

a. Dependent Variable: OFT_Distance.

```

MIXED MB_buried BY asd_diagnosis
  /CRITERIA=CIN(95) MXITER(100) MXSTEP(10) SCORING(1) SINGULAR(0.000000000001)
HCONVERGE(0,
  ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE(0.000001, ABSOLUTE)
/FIXED=asd_diagnosis | SSTYPE(3)
/METHOD=REML
/PRINT= SOLUTION
/REPEATED=Donor | SUBJECT(Round*MouseID) COVTYPE(DIAG)
/EMMEANS=TABLES(asd_diagnosis).

```

Mixed Model Analysis

Notes

Output Created		13-NOV-2017 13:16...
Comments		
Input	Data	/Users/clane/Dropbox/Consulting/Gil Sharon/Gil Sharon.Subset8.111317.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	Gender
	N of Rows in Working Data File	206
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

Syntax		MIXED MB_buried BY asd_diagnosis /CRITERIA=CIN(95) MXITER(100) MXSTEP (10) SCORING(1) SINGULAR (0.000000000001) HCONVERGE(0, ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE (0.000001, ABSOLUTE) /FIXED=asd_diagnosis SSTYPE(3) /METHOD=REML /PRINT= SOLUTION /REPEATED=Donor SUBJECT (Round*MouseID) COVTYPE(DIAG) /EMMEANS=TABLES (asd_diagnosis).
Resources	Processor Time	00:00:00.04
	Elapsed Time	00:00:00.00

Model Dimension^a

Gender			Number of Levels	Covariance Structure	Number of Parameters
Female	Fixed Effects	Intercept	1		1
		ASD_diagnosis	2		1
	Repeated Effects	Donor	8	Diagonal	8
	Total		11		10
Male	Fixed Effects	Intercept	1		1
		ASD_diagnosis	2		1
	Repeated Effects	Donor	8	Diagonal	8
	Total		11		10

Model Dimension^a

Gender			Subject Variables	Number of Subjects
Female	Fixed Effects	Intercept		
		ASD_diagnosis		
	Repeated Effects	Donor	Round * MouseID	103
	Total			
Male	Fixed Effects	Intercept		
		ASD_diagnosis		
	Repeated Effects	Donor	Round * MouseID	103
	Total			

a. Dependent Variable: MB_buried.

Information Criteria^a

Female	-2 Restricted Log Likelihood	605.156
	Akaike's Information Criterion (AIC)	621.156
	Hurvich and Tsai's Criterion (AICC)	622.722
	Bozdogan's Criterion (CAIC)	650.077
	Schwarz's Bayesian Criterion (BIC)	642.077
Male	-2 Restricted Log Likelihood	583.194
	Akaike's Information Criterion (AIC)	599.194
	Hurvich and Tsai's Criterion (AICC)	600.760
	Bozdogan's Criterion (CAIC)	628.115
	Schwarz's Bayesian Criterion (BIC)	620.115

The information criteria are displayed in smaller-is-better form.

a. Dependent Variable: MB_buried.

Fixed Effects

Type III Tests of Fixed Effects^a

Gender	Source	Numerator df	Denominator df	F	Sig.
Female	Intercept	1	67.974	254.057	.000
	ASD_diagnosis	1	67.974	2.856	.096
Male	Intercept	1	90.482	242.416	.000
	ASD_diagnosis	1	90.482	23.418	.000

a. Dependent Variable: MB_buried.

Estimates of Fixed Effects^a

Gender	Parameter	Estimate	Std. Error	df	t	Sig.
Female	Intercept	7.116101	.846005	38.473	8.411	.000
	[ASD_diagnosis=ASD]	1.687806	.998797	67.974	1.690	.096
	[ASD_diagnosis=NT]	0 ^b	0	.	.	.
Male	Intercept	4.271459	.546386	40.663	7.818	.000
	[ASD_diagnosis=ASD]	3.852696	.796136	90.482	4.839	.000
	[ASD_diagnosis=NT]	0 ^b	0	.	.	.

Estimates of Fixed Effects^a

Gender	Parameter	95% Confidence Interval	
		Lower Bound	Upper Bound
Female	Intercept	5.404144	8.828057
	[ASD_diagnosis=ASD]	-.305277	3.680889
	[ASD_diagnosis=NT]	.	.
Male	Intercept	3.167734	5.375185
	[ASD_diagnosis=ASD]	2.271148	5.434244
	[ASD_diagnosis=NT]	.	.

a. Dependent Variable: MB_buried.

b. This parameter is set to zero because it is redundant.

Covariance Parameters

Estimates of Covariance Parameters ^a

Gender	Parameter		Estimate	Std. Error
Female	Repeated Measures	Var: [Donor=A11-old]	17.429406	6.213585
		Var: [Donor=A17-old]	16.330092	8.255026
		Var: [Donor=A24-new]	15.280243	4.531275
		Var: [Donor=A3-old]	27.950208	13.988689
		Var: [Donor=A9-old]	22.962511	11.561653
		Var: [Donor=C1]	24.497002	10.172777
		Var: [Donor=C4]	32.938952	16.621368
		Var: [Donor=N5]	30.099795	9.754387
Male	Repeated Measures	Var: [Donor=A11-old]	30.280271	10.247402
		Var: [Donor=A17-old]	24.573894	12.788091
		Var: [Donor=A24-new]	15.366998	6.016557
		Var: [Donor=A3-old]	12.974865	6.565814
		Var: [Donor=A9-old]	17.065448	9.247664
		Var: [Donor=C1]	10.804886	3.389047
		Var: [Donor=C4]	26.643417	13.963216
		Var: [Donor=N5]	14.468660	5.148174

a. Dependent Variable: MB_buried.

Estimated Marginal Means

ASD_diagnosis^a

Gender	ASD_diagnosis	Mean	Std. Error	df	95% Confidence Interval	
					Lower Bound	Upper Bound
Female	ASD	8.804	.531	59.913	7.742	9.866
	NT	7.116	.846	38.473	5.404	8.828
Male	ASD	8.124	.579	50.005	6.961	9.287
	NT	4.271	.546	40.663	3.168	5.375

a. Dependent Variable: MB_buried.

```

MIXED DSI_Social_duration BY asd_diagnosis
  /CRITERIA=CIN(95) MXITER(100) MXSTEP(10) SCORING(1) SINGULAR(0.000000000001)
HCONVERGE(0,
  ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE(0.000001, ABSOLUTE)
/FIXED=asd_diagnosis | SSTYPE(3)
/METHOD=REML
/PRINT= SOLUTION
/REPEATED=Donor | SUBJECT(Round*MouseID) COVTYPE(DIAG)
/EMMEANS=TABLES(asd_diagnosis).

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Mixed Model Analysis

Notes

Output Created		13-NOV-2017 13:16...
Comments		
Input	Data	/Users/clane/Dropbox/Consulting/Gil Sharon/Gil Sharon.Subset8.111317.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	Gender
	N of Rows in Working Data File	206
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

Syntax		MIXED DSI_Social_duration BY asd_diagnosis /CRITERIA=CIN(95) MXITER(100) MXSTEP (10) SCORING(1) SINGULAR (0.000000000001) HCONVERGE(0, ABSOLUTE) LCONVERGE(0, ABSOLUTE) PCONVERGE (0.000001, ABSOLUTE) /FIXED=asd_diagnosis I SSTYPE(3) /METHOD=REML /PRINT= SOLUTION /REPEATED=Donor I SUBJECT (Round*MouseID) COVTYPE(DIAG) /EMMEANS=TABLES (asd_diagnosis).
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.00

Model Dimension ^a

Gender			Number of Levels	Covariance Structure	Number of Parameters
Female	Fixed Effects	Intercept	1		1
		ASD_diagnosis	2		1
	Repeated Effects	Donor	8	Diagonal	8
	Total		11		10
Male	Fixed Effects	Intercept	1		1
		ASD_diagnosis	2		1
	Repeated Effects	Donor	8	Diagonal	8
	Total		11		10

Model Dimension^a

Gender			Subject Variables	Number of Subjects
Female	Fixed Effects	Intercept		
		ASD_diagnosis		
	Repeated Effects	Donor	Round * MouseID	61
	Total			
Male	Fixed Effects	Intercept		
		ASD_diagnosis		
	Repeated Effects	Donor	Round * MouseID	67
	Total			

a. Dependent Variable: DSI_Social_duration.

Information Criteria^a

Female	-2 Restricted Log Likelihood	465.774
	Akaike's Information Criterion (AIC)	481.774
	Hurvich and Tsai's Criterion (AICC)	484.654
	Bozdogan's Criterion (CAIC)	506.394
	Schwarz's Bayesian Criterion (BIC)	498.394
Male	-2 Restricted Log Likelihood	600.556
	Akaike's Information Criterion (AIC)	616.556
	Hurvich and Tsai's Criterion (AICC)	619.128
	Bozdogan's Criterion (CAIC)	641.951
	Schwarz's Bayesian Criterion (BIC)	633.951

The information criteria are displayed in smaller-is-better form.

a. Dependent Variable: DSI_Social_duration.

Fixed Effects

Type III Tests of Fixed Effects^a

Gender	Source	Numerator df	Denominator df	F	Sig.
Female	Intercept	1	27.880	167.215	.000
	ASD_diagnosis	1	27.880	.024	.878
Male	Intercept	1	49.308	265.170	.000
	ASD_diagnosis	1	49.308	7.524	.008

a. Dependent Variable: DSI_Social_duration.

Estimates of Fixed Effects^a

Gender	Parameter	Estimate	Std. Error	df	t	Sig.
Female	Intercept	20.582433	2.664181	15.303	7.726	.000
	[ASD_diagnosis=ASD]	-.485947	3.145806	27.880	-.154	.878
	[ASD_diagnosis=NT]	0 ^b	0	.	.	.
Male	Intercept	54.021254	4.512932	24.977	11.970	.000
	[ASD_diagnosis=ASD]	-15.575987	5.678355	49.308	-2.743	.008
	[ASD_diagnosis=NT]	0 ^b	0	.	.	.

Estimates of Fixed Effects^a

Gender	Parameter	95% Confidence Interval	
		Lower Bound	Upper Bound
Female	Intercept	14.913637	26.251229
	[ASD_diagnosis=ASD]	-6.931091	5.959196
	[ASD_diagnosis=NT]	.	.
Male	Intercept	44.726270	63.316239
	[ASD_diagnosis=ASD]	-26.985267	-4.166706
	[ASD_diagnosis=NT]	.	.

a. Dependent Variable: DSI_Social_duration.

b. This parameter is set to zero because it is redundant.

Covariance Parameters

Estimates of Covariance Parameters ^a

Gender	Parameter		Estimate	Std. Error
Female	Repeated Measures	Var: [Donor=A11-old]	140.090191	71.397637
		Var: [Donor=A17-old]	134.777843	76.400807
		Var: [Donor=A24-new]	72.859226	39.234047
		Var: [Donor=A3-old]	98.581423	49.576679
		Var: [Donor=A9-old]	125.631719	69.599676
		Var: [Donor=C1]	757.506580	448.970996
		Var: [Donor=C4]	92.997943	47.639192
		Var: [Donor=N5]	170.418109	87.560745
Male	Repeated Measures	Var: [Donor=A11-old]	844.056432	426.255715
		Var: [Donor=A17-old]	315.449846	167.042851
		Var: [Donor=A24-new]	946.383643	489.705026
		Var: [Donor=A3-old]	514.768216	258.757597
		Var: [Donor=A9-old]	315.428131	160.611237
		Var: [Donor=C1]	639.606926	264.354174
		Var: [Donor=C4]	421.953650	214.241349
		Var: [Donor=N5]	615.159712	340.984976

a. Dependent Variable: DSI_Social_duration.

Estimated Marginal Means

ASD_diagnosis^a

Gender	ASD_diagnosis	Mean	Std. Error	df	95% Confidence Interval	
					Lower Bound	Upper Bound
Female	ASD	20.096	1.673	35.511	16.702	23.491
	NT	20.582	2.664	15.303	14.914	26.251
Male	ASD	38.445	3.446	31.501	31.421	45.470
	NT	54.021	4.513	24.977	44.726	63.316

a. Dependent Variable: DSI_Social_duration.

split file off.