

Altered states of consciousness caused by a mindfulness-based programme up to a year later: results from a randomised controlled trial

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S1 Appendix: Supplemental Materials

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Adapted OAV used in this study

Different states of consciousness

Below you will find a number of statements. Next to each statement is a line with the endpoints "No, not more than usual" and "Yes, much more than usual". The line represents something like a thermometer that will be used to assess changes from your normal waking consciousness (i.e. how you feel on an everyday basis).

Please rate to what extent the statements reflect any unusual experiences you may have had **in the last YEAR**, by moving the slider next to the statements. Note that your normal waking consciousness corresponds to a mark at the very left end of the scale, i.e.: "No, not more than usual". The further to the right you move the slide, the more unusual the experience.

Do **NOT** count any experiences you had under the influence of **alcohol or drugs**. Please complete the scale even if you haven't had any altered or unusual experiences. Your response will still be really useful to us.

	No, not more than usual	Yes, much more than usual
I had the feeling of being connected to a higher power	<input type="range"/>	
I felt like a puppet (my actions being controlled by someone else)	<input type="range"/>	
I felt boundless joy	<input type="range"/>	
I saw patterns in complete darkness or with closed eyes	<input type="range"/>	
Everything seemed to come together as one	<input type="range"/>	
Noises seemed to influence what I saw	<input type="range"/>	
I saw colours before me in total darkness or with closed eyes	<input type="range"/>	
The shapes of things seemed to change by sounds and noises	<input type="range"/>	
It seemed to me as though I did not have a body anymore	<input type="range"/>	

I had difficulty making
even the smallest
decision ●

I was afraid that the
state I was in would
last forever ●

I saw light or flashes
of light in total
darkness or with
closed eyes ●

It seemed to me that
my environment and I
were one ●

I had difficulty in
distinguishing
important from
unimportant things ●

I saw scenes rolling
by in total darkness
or with my eyes
closed ●

I experienced a touch
of eternity ●

Conflicts and
contradictions
seemed to dissolve ●

I was afraid without
being able to say
exactly why ●

I experienced
everything as
terrifyingly distorted ●

I experienced my
surroundings as
strange and weird ●

Everyday things
gained a special
meaning ●

I felt as though I were
paralysed ●

I felt very profound ●

I experienced past,
present and future as
a oneness ●

I felt threatened ●

I had the feeling of
being outside of my
body ●

I felt as though I were floating	<input type="radio"/>	
I felt isolated from everything and everyone	<input type="radio"/>	
I was not able to complete a thought, my thought repeatedly became disconnected	<input type="radio"/>	
I gained clarity into connections that puzzled me before	<input type="radio"/>	
I could see pictures from my past or fantasies extremely clearly	<input type="radio"/>	
The colours of things seemed to be changed by sounds and noises	<input type="radio"/>	
I had very original thoughts	<input type="radio"/>	
I had the feeling that I no longer had a will of my own	<input type="radio"/>	
I experienced a kind of awe	<input type="radio"/>	
My imagination was extremely vivid	<input type="radio"/>	
I experienced a profound peace in myself	<input type="radio"/>	
I had the feeling something horrible would happen	<input type="radio"/>	
I experienced an all- embracing love	<input type="radio"/>	
My experience had religious aspects	<input type="radio"/>	
Things around me had a new strange meaning for me	<input type="radio"/>	
Objects around me engaged me emotionally much more than usual	<input type="radio"/>	

Other aspects

Is there any other aspect about an unusual state you have experienced in the last year that you would like to tell us about?

Meditation

If you have been practising meditation in the last year, did any of the unusual states you have experienced take place while you were meditating? Select all that apply:

- ☐ I haven't meditated in the last year
- ☐ I have meditated in the last year, but none of these states happened while I was meditating
- ☐ Prefer not to answer
- ☐ [All the states selected by the participant in the questionnaire will be displayed here as options]

Flashback

Did any of the unusual states you have experienced occur during a "flashback" as a result of psychoactive drug use? Select all that apply:

- ☐ None apply
- ☐ Prefer not to answer
- ☐ [All the states selected by the participant in the questionnaire will be displayed here as options]

Supplemental Tables

Supplemental Table 1. Regression model to assess baseline variables predicting OAV completion among randomised participants.

	Odds Ratios	Standard Error	P value
Arm - Intervention	1.04	0.19	0.84
Cohort 1	1.21	0.19	0.32
Age	1.04	0.02	0.1
Gender – Men	0.68	0.21	0.06
Ethnicity – White	2.25	0.27	0.003
Nationality* – International	0.95	0.31	0.88
Disability – Yes	1.15	0.29	0.62
Degree – Undergraduate	0.98	0.25	0.93
Last Year	0.48	0.21	0.0005
Previous meditation**	1.02	0.31	0.94
Baseline CORE-OM	0.57	0.29	0.05
Baseline WEMWBS	0.97	0.02	0.06

* Inferred from whether participants paid their study fees according to UK/European Union, or overseas rates.

** Spent in total more than 10 hours meditating in the past, or completed an eight-week mindfulness course.

Abbreviations: CORE-OM: Clinical Outcomes in Routine Evaluation Outcome Measure; WEMWBS: Warwick-Edinburgh Mental Wellbeing Scale.

Supplemental Table 2. Regression model to assess baseline variables predicting OAV completion among those who completed the main part of the one-year follow-up questionnaire.

	Odds Ratios	Standard Error	P value
Arm - Intervention	1.05	0.25	0.85
Cohort 1	1.35	0.25	0.23
Age	1.08	0.04	0.04
Gender – Men	0.85	0.26	0.55
Ethnicity – White	2.25	0.31	0.01
Nationality* – International	0.51	0.35	0.06
Disability – Yes	1.2	0.38	0.63
Degree – Undergraduate	1.26	0.34	0.49
Last Year	0.92	0.27	0.78
Previous meditation**	1.05	0.4	0.9
Baseline CORE-OM	0.5	0.39	0.08
Baseline WEMWBS	0.96	0.02	0.1

* Inferred from whether participants paid their study fees according to UK/European Union, or overseas rates.

** Spent in total more than 10 hours meditating in the past, or completed an eight-week mindfulness course.

Abbreviations: CORE-OM: Clinical Outcomes in Routine Evaluation Outcome Measure; WEMWBS: Warwick-Edinburgh Mental Wellbeing Scale.

Supplemental Table 3. Logit Probability Model for Experiencing Altered States of Consciousness (ASC) by trial arm.

ASC dimensions	Category	MSS		SAU		OR	95% CI	p
		n	%	n	%			
Experience of Unity	zero	39	42.4	53	57.6	2.01	1.09, 3.67	0.024
	>zero	61	58.1	44	41.9			
Spiritual Experience	zero	49	49.0	54	55.7	1.31	0.73, 2.36	0.368
	>zero	51	51.0	43	44.3			
Blissful State	zero	25	25.0	32	33.0	1.35	0.70, 2.59	0.360
	>zero	75	75.0	65	67.0			
Insightfulness	zero	43	43.0	47	48.5	1.28	0.70, 2.32	0.417
	>zero	57	57.0	50	51.5			
Disembodiment	zero	58	58.0	72	74.2	2.29	1.23, 4.26	0.009
	>zero	42	42.0	25	25.8			
Impaired Control and Cognition	zero	39	39.0	33	34.0	0.79	0.43, 1.47	0.452
	>zero	61	61.0	64	66.0			
Anxiety	zero	46	46.0	35	36.1	0.68	0.37, 1.24	0.200
	>zero	54	54.0	62	63.9			
Complex Imagery	zero	59	59.0	59	60.8	1.09	0.61, 1.95	0.758
	>zero	41	41.0	38	39.2			
Elementary Imagery	zero	56	56.0	61	62.9	1.75	0.97, 3.18	0.063
	>zero	44	44.0	36	37.1			
Audio-Visual Synesthesia	zero	76	76.0	86	88.7	2.41	1.10, 5.27	0.028
	>zero	24	24.0	11	11.3			
Changed Meaning of Percepts	zero	48	48.0	60	61.9	1.70	0.94, 3.10	0.084
	>zero	52	52.0	37	38.1			

MSS: mindfulness skills for students. SAU: support as usual. n: raw frequencies; raw %: percentages. OR: odds ratio of experiencing a value >0; 95% CI: 95% confidence interval. The model controlled for the ASC experienced during flashbacks, as well as age, gender and cohort (design variables). p: p-value associated with the Wald test using robust standard errors.

Supplemental Table 4. GLM Probability Model for Experiencing Altered States of Consciousness (ASC) by trial arm.

ASC dimension	MSS	SAU	Coefficient	95% CI	p
	M (SD)	M (SD)			
Experience of Unity n (MSS, SAU) = 61, 44	18.03 (19.28)	14.04 (17.45)	0.51	(0.04, 0.97)	.032
Spiritual Experience n (MSS, SAU) = 51, 43	22.82 (20.16)	19.44 (21.30)	0.19	(-0.21, 0.58)	.352
Blissful State n (MSS, SAU) = 75, 67	27.17 (26.78)	21.77 (20.74)	0.27	(-0.07, 0.60)	.122
Insightfulness n (MSS, SAU) = 57, 50	19.42 (20.67)	19.35 (18.90)	0.09	(-0.31, 0.48)	.675
Disembodiment n (MSS, SAU) = 42, 26	20.11 (22.83)	14.62 (14.52)	0.26	(-0.25, 0.77)	.313
Impaired Control and Cognition n (MSS, SAU) = 62, 68	14.73 (15.88)	15.53 (17.01)	-0.09	(-0.48, 0.29)	.641
Anxiety n (MSS, SAU) = 54, 65	15.54 (19.30)	15.72 (18.22)	-0.09	(-0.49, 0.31)	.664
Complex Imagery n (MSS, SAU) = 40, 39	18.71 (19.86)	21.13 (19.92)	-0.11	(-0.56, 0.35)	.645
Elementary Imagery n (MSS, SAU) = 46, 36	21.93 (21.96)	15.86 (20.55)	0.35	(-0.17, 0.86)	.185
Audio-Visual Synesthesia n (MSS, SAU) = 25, 12	11.08 (12.83)	12.28 (19.50)	-0.29	(-1.27, 0.70)	.569
Changed Meaning of Percepts n (MSS, SAU) = 54, 39	18.44 (20.80)	16.81 (16.74)	0.11	(-0.34, 0.55)	.639

MSS: mindfulness skills for students. SAU: support as usual. M (SD): raw mean (standard deviation). Coefficient: unstandardized coefficient for the Generalized Linear Model (GLM) with the log link and gamma distribution part of the two-part model. 95% CI: 95% confidence interval. p: p-value associated with the Wald test contrast using robust standard errors.

Supplemental Table 5. Logit Probability Model for Experiencing Altered States of Consciousness (ASCs) with (formal) Mindfulness Practice as a Predictor.

ASC dimensions		Category	OR	95% CI	p
Experience of Unity		zero			
		>zero	1.02	1.01, 1.04	0.007
Spiritual Experience		zero			
		>zero	1.01	0.99, 1.02	0.397
Blissful State		zero			
		>zero	1.02	1.01, 1.04	0.007
Insightfulness		zero			
		>zero	1.01	1.00, 1.03	0.047
Disembodiment		zero			
		>zero	1.02	1.01, 1.04	<.001
Impaired Control and Cognition		zero			
		>zero	0.99	0.98, 1.00	0.045
Anxiety		zero			
		>zero	0.98	0.97, 1.00	0.019
Complex Imagery		zero			
		>zero	1.01	0.99, 1.02	0.252
Elementary Imagery		zero			
		>zero	1.01	0.99, 1.02	0.407
Audio-Visual Synesthesia		zero			
		>zero	1.00	0.99, 1.02	0.549
Changed Meaning of Percepts		zero			
		>zero	1.01	0.99, 1.02	0.169

OR: odds ratio of experiencing a value >0; 95% CI: 95% confidence interval; p: p-value associated with the Wald test using robust standard errors. The model controlled for the ASCs experienced during flashbacks, as well as age, gender and cohort (design variables).

Supplemental Table 6. GLM Probability Model for Experiencing Altered States of Consciousness (ASCs) with (formal) Mindfulness Practice as a Predictor.

ASC dimension	Coefficient	95% CI	p
Experience of Unity	0.01	(0.01, 0.02)	.001
Spiritual Experience	0.01	(0.01, 0.02)	<.001
Blissful State	0.01	(0.01, 0.02)	<.001
Insightfulness	0.01	(0.0001, 0.01)	.048
Disembodiment	0.01	(-0.001, 0.01)	.122
Impaired Control and Cognition	-0.004	(-0.01, 0.002)	.155
Anxiety	0.0002	(-0.007, 0.007)	.960
Complex Imagery	0.001	(-0.01, 0.01)	.909
Elementary Imagery	0.004	(-0.004, 0.01)	.343
Audio-Visual Synesthesia	0.02	(-0.0002, 0.04)	.052
Changed Meaning of Percepts	0.01	(0.002, 0.02)	.017

Coefficient: unstandardized coefficient for the Generalized Linear Model (GLM) with the log link and gamma distribution part of the two-part model. 95% CI: 95% confidence interval. p: p-value associated with the Wald test contrast using robust standard errors. The model controlled for the ASCs experienced during flashbacks, as well as age, gender and cohort (design variables).

Table 7. Joint Model (Zero and Non-Zero Parts) for Experiencing Altered States of Consciousness (ASC) with (informal) Mindfulness Practice as a Predictor.

ASC dimension	B	SE	95% CI	χ^2 (df)	p
Experience of Unity	5.45	2.50	0.56, 10.35	6.17 (2)	.045
Spiritual Experience	3.32	2.05	-0.69, 7.33	3.31 (2)	.191
Blissful State	8.87	3.40	2.22, 15.53	6.90 (2)	.032
Insightfulness	4.53	2.42	-0.21, 9.28	4.08 (2)	.130
Disembodiment	2.78	2.05	-0.24, 6.79	1.96 (2)	.375
Impaired Control and Cognition	-2.63	1.61	-5.79, 0.53	4.04 (2)	.133
Anxiety	-2.56	1.66	-5.81, 0.70	3.69 (2)	.158
Complex Imagery	0.65	1.87	-3.00, 4.31	0.12 (2)	.940
Elementary Imagery	-0.03	2.32	-4.58, 4.53	0.35 (2)	.840
Audio-Visual Synesthesia	-0.96	1.13	-3.18, 1.26	1.13 (2)	.568
Changed Meaning of Percepts	4.16	2.33	-0.41, 8.73	4.78 (2)	.092

B: marginal effects. SE: (Robust) Standard Error. 95% CI: 95% Confidence Interval for the marginal effects. p: p-value associated with the joint statistical test of significance including the parameters of the two-part model (logit in the first part (zero vs. >zero), and GLM with a log link and gamma distribution in the second part (>zero)). Models included the following predictors: informal mindfulness practice, ASC as a consequence of flashbacks, as well as age, sex, and cohort (design variables). The significant relationships were not longer significant when the Benjamini-Hochberg correction was applied to correct for multiple comparisons.

Supplemental Table 8. Logit Probability Model for Experiencing Altered States of Consciousness (ASCs) with (informal) Mindfulness Practice as a Predictor.

ASC dimensions		OR	95% CI	p
	Category			
Experience of Unity	zero			
	>zero	1.78	1.00, 3.20	0.049
Spiritual Experience	zero			
	>zero	1.54	0.92, 2.56	0.097
Blissful State	zero			
	>zero	1.84	0.94, 3.61	0.076
Insightfulness	zero			
	>zero	1.46	0.87, 2.46	0.148
Disembodiment	zero			
	>zero	1.23	0.76, 2.01	0.387
Impaired Control and Cognition	zero			
	>zero	0.91	0.55, 1.52	0.739
Anxiety	zero			
	>zero	0.68	0.41, 1.12	0.126
Complex Imagery	zero			
	>zero	1.06	0.65, 1.73	0.805
Elementary Imagery	zero			
	>zero	1.14	0.69, 1.86	0.620
Audio-Visual Synesthesia	zero			
	>zero	0.97	0.54, 1.75	0.917
Changed Meaning of Percepts	zero			
	>zero	1.54	0.93, 2.54	0.093

OR: odds ratio of experiencing a value >0; 95% CI: 95% confidence interval; p: p-value associated with the Wald test using robust standard errors. The model controlled for the ASCs experienced during flashbacks, as well as age, gender and cohort (design variables).

Supplemental Table 9. GLM Probability Model for Experiencing Altered States of Consciousness (ASCs) with (informal) Mindfulness Practice as a Predictor.

ASC dimension	Coefficient	95% CI	p
Experience of Unity	0.29	(-0.07, 0.65)	.113
Spiritual Experience	0.08	(-0.20, 0.35)	.589
Blissful State	0.28	(-0.002, 0.56)	.052
Insightfulness	0.27	(-0.06, 0.60)	.106
Disembodiment	0.22	(-0.23, 0.67)	.331
Impaired Control and Cognition	-0.31	(-0.61, -0.001)	.049
Anxiety	-0.39	(-0.52, 0.18)	.333
Complex Imagery	0.05	(-0.34, 0.45)	.786
Elementary Imagery	-0.06	(-0.43, 0.30)	.729
Audio-Visual Synesthesia	-0.30	(-0.85, 0.25)	.288
Changed Meaning of Percepts	0.24	(-0.11, 0.60)	.183

Coefficient: unstandardized coefficient for the Generalized Linear Model (GLM) with the log link and gamma distribution part of the two-part model. 95% CI: 95% confidence interval. p: p-value associated with the Wald test contrast using robust standard errors. The model controlled for the ASCs experienced during flashbacks, as well as age, gender and cohort (design variables).

Supplemental Table 10. Altered states of consciousness that were reported to happen during meditation

ASCs	N=73	
	Freq.	%
Experience of Unity	31	42.5
Spiritual Experience	14	19.2
Blissful State	34	46.6
Insightfulness	18	24.7
Disembodiment	21	28.8
Impaired Control and Cognition	11	15.1
Anxiety	8	11.0
Complex Imagery	11	15.1
Elementary Imagery	13	17.8
Audio-Visual Synesthesia	3	4.1
Changed Meaning of Percepts	15	20.6

ASCs: altered states of consciousness. Due to an error during data collection, only those participants who reported having meditated in the prior six months saw the question about whether ASCs happened during meditation, so we base the analysis of the proportion of ASCs that happened during meditation on this sub-sample (N=73; MSS=59; SAU=14). MSS: mindfulness skills for students. SAU: support as usual. Freq.: frequencies; %: percentages.

Supplemental Table 11. ASC experiences that were reported to happen due to flashbacks

ASC dimensions	value	MSS		SAU		Total	
		n	%	n	%	n	%
Experience of Unity	no	98	98.0	91	93.8	189	95.9
	yes	2	2.0	6	6.2	8	4.1
Spiritual Experience	no	97	97.0	95	97.9	192	97.5
	yes	3	3.0	2	2.1	5	2.5
Blissful State	no	97	97.0	94	96.9	191	97.0
	yes	3	3.0	3	3.1	6	3.0
Insightfulness	no	99	99.0	93	95.9	192	97.5
	yes	1	1.0	4	4.1	5	2.5
Disembodiment	no	100	100	95	97.9	195	99.0
	yes	0	0.0	2	2.1	2	1.0
Impaired Control and Cognition	no	98	98.0	94	96.9	192	97.5
	yes	2	2.0	3	3.1	5	2.5
Anxiety	no	98	98.0	93	95.9	191	97.0
	yes	2	2.0	4	4.1	6	3.0
Complex Imagery	no	100	100	96	99.0	196	99.5
	yes	0	0.0	1	1.0	1	0.5
Elementary Imagery	no	100	100	95	97.9	195	99.0
	yes	0	0.0	2	2.1	2	1.0
Audio-Visual Synesthesia	no	100	100	95	97.9	195	99.0
	yes	0	0.0	2	2.1	2	1.0
Changed Meaning of Percepts	no	98	98.0	95	97.9	193	98.0
	yes	2	2.0	2	2.1	4	2.0

ASC: altered states of consciousness. MSS: mindfulness skills for students. SAU: support as usual. n: frequencies; %: percentages.

Supplemental Table 12. Joint Model (Zero and Non-Zero Parts) for Experiencing Altered States of Consciousness (ASC) with baseline sociodemographic characteristics as potential predictors

ASC dimension	B	SE	95% CI	χ^2 (df)	p
Experience of Unity					
Age (years)	-0.16	0.19	-0.52, 0.21	4.64 (2)	.098
Sex (male)	-2.08	2.28	-6.54, 2.39	3.02 (2)	.221
Previous meditation (hours)	0.16	0.07	0.02, 0.30	6.68 (2)	.035 [†]
Disability (yes)	-0.20	3.10	-6.27, 5.87	0.04 (2)	.982
Nationality (international)	4.68	4.23	-3.61, 12.97	1.70 (2)	.427
Ethnicity (other than white)	6.00	4.61	-3.03, 15.02	2.48 (2)	.290
Spirituality	1.52	1.80	-2.01, 5.06	1.00 (2)	.606
Baseline distress	4.92	2.61	-0.19, 10.04	4.54 (2)	.103
Spiritual Experience					
Age (years)	-0.20	0.21	-0.62, 0.22	3.25 (2)	.197
Sex (male)	-1.02	2.74	-6.38, 4.35	0.53 (2)	.768
Previous meditation (hours)	0.10	0.08	-0.06, 0.26	1.49 (2)	.475
Disability (yes)	2.56	3.62	-4.54, 9.66	6.07 (2)	.048 [†]
Nationality (international)	-2.16	2.98	-7.99, 3.68	0.50 (2)	.778
Ethnicity (other than white)	6.01	4.29	-2.39, 14.41	2.81 (2)	.246
Spirituality	4.75	1.78	1.25, 8.24	7.85 (2)	.020 [†]
Baseline distress	2.07	2.20	-2.24, 6.38	0.90 (2)	.637
Blissful State					
Age (years)	-0.31	0.30	-0.89, 0.26	2.61 (2)	.271
Sex (male)	-2.78	3.39	-9.42, 3.87	1.25 (2)	.537
Previous meditation (hours)	0.30	0.11	0.08, 0.52	7.27 (2)	.026 [†]
Disability (yes)	3.49	5.20	-6.70, 13.69	0.50 (2)	.777
Nationality (international)	2.42	5.82	-8.99, 13.82	2.56 (2)	.278
Ethnicity (other than white)	7.48	5.49	-3.28, 18.24	4.79 (2)	.091
Spirituality	4.40	2.29	-0.10, 8.90	4.08 (2)	.130
Baseline distress	5.25	2.91	-0.45, 10.96	4.46 (2)	.107
Insightfulness					
Age (years)	-0.14	0.22	-0.57, 0.28	2.31 (2)	.315
Sex (male)	0.39	2.56	-4.63, 5.40	3.11 (2)	.211
Previous meditation (hours)	-0.04	0.07	-0.19, 0.10	5.92 (2)	.052
Disability (yes)	1.32	3.34	-5.23, 7.87	1.15 (2)	.564
Nationality (international)	3.62	4.31	-4.83, 12.08	8.64 (2)	.013 [†]
Ethnicity (other than white)	8.06	4.65	-1.05, 17.18	5.41 (2)	.067
Spirituality	-0.64	2.03	-4.61, 3.33	1.38 (2)	.502
Baseline distress	2.23	2.28	-2.24, 6.70	1.14 (2)	.565
Disembodiment					
Age (years)	-0.26	0.18	-0.60, 0.08	11.02 (2)	.004
Sex (male)	-0.22	2.32	-4.77, 4.34	0.10 (2)	.949
Previous meditation (hours)	0.02	0.05	-0.08, 0.11	0.14 (2)	.932
Disability (yes)	-0.15	3.63	-7.28, 6.97	1.82 (2)	.402
Nationality (international)	2.71	3.14	-3.45, 8.86	1.34 (2)	.513
Ethnicity (other than white)	2.74	3.60	-4.32, 9.79	3.43 (2)	.180
Spirituality	-0.54	1.77	-4.00, 2.92	4.66 (2)	.097
Baseline distress	6.58	2.77	1.15, 12.00	12.39 (2)	.002
Impaired Control and Cognition					
Age (years)	-0.12	0.25	-0.61, 0.36	3.16 (2)	.206
Sex (male)	-1.17	2.19	-5.46, 3.12	0.29 (2)	.864
Previous meditation (hours)	0.04	0.05	-0.06, 0.14	0.69 (2)	.708
Disability (yes)	-0.26	3.03	-6.20, 5.68	0.69 (2)	.708
Nationality (international)	0.53	3.23	-5.80, 6.87	0.43 (2)	.806
Ethnicity (other than white)	-3.30	2.64	-8.47, 1.87	2.97 (2)	.227
Spirituality	2.07	1.73	-1.31, 5.46	1.52 (2)	.468
Baseline distress	6.91	2.59	1.84, 11.99	8.57 (2)	.014 [†]
Anxiety					
Age (years)	-0.08	0.27	-0.60, 0.45	5.11 (2)	.078
Sex (male)	-1.81	2.33	-6.38, 2.76	1.28 (2)	.527
Previous meditation (hours)	-0.002	0.06	-0.11, 0.11	1.21 (2)	.547
Disability (yes)	5.44	3.81	-2.02, 12.91	2.72 (2)	.257
Nationality (international)	1.68	3.98	-6.13, 9.48	0.21 (2)	.902
Ethnicity (other than white)	-3.93	3.09	-9.98, 2.12	1.43 (2)	.489
Spirituality	3.33	1.89	-0.38, 7.04	3.61 (2)	.165
Baseline distress	9.71	2.71	4.40, 15.02	17.07 (2)	<.001

Complex Imagery					
Age (years)	-0.18	0.24	-0.65, 0.29	0.58 (2)	.749
Sex (male)	-0.09	2.41	-4.82, 4.63	0.12 (2)	.940
Previous meditation (hours)	-0.16	0.07	-0.30, -0.02	7.32 (2)	.025 [†]
Disability (yes)	0.90	3.28	-5.53, 7.33	0.09 (2)	.954
Nationality (international)	-0.76	3.34	-7.31, 5.80	0.24 (2)	.885
Ethnicity (other than white)	-2.88	2.75	-8.28, 2.51	1.05 (2)	.593
Spirituality	2.40	1.76	-1.05, 5.85	4.38 (2)	.112
Baseline distress	5.54	2.54	0.56, 10.53	6.15 (2)	.046 [†]
Elementary Imagery					
Age (years)	-0.11	0.26	-0.62, 0.39	1.89 (2)	.389
Sex (male)	0.61	2.46	-4.22, 5.43	2.23 (2)	.328
Previous meditation (hours)	0.05	0.05	-0.05, 0.15	2.49 (2)	.287
Disability (yes)	2.32	3.63	-4.80, 9.43	1.88 (2)	.391
Nationality (international)	3.01	4.80	-6.40, 12.43	8.91 (2)	.012 [†]
Ethnicity (other than white)	-4.00	2.50	-8.89, 0.90	3.25 (2)	.197
Spirituality	0.75	1.86	-2.89, 4.39	0.27 (2)	.973
Baseline distress	5.66	3.01	0.24, 11.55	6.69 (2)	.035 [†]
Audio-Visual Synesthesia					
Age (years)	0.09	0.06	-0.03, 0.20	4.28 (2)	.118
Sex (male)	1.62	1.03	-0.40, 3.64	3.77 (2)	.152
Previous meditation (hours)	-0.001	0.02	-0.05, 0.05	0.78 (2)	.677
Disability (yes)	-0.30	1.42	-3.08, 2.48	0.94 (2)	.626
Nationality (international)	-1.94	0.77	-3.45, -0.42	9.19 (2)	.010 [†]
Ethnicity (other than white)	1.09	1.38	-1.61, 3.78	1.24 (2)	.537
Spirituality	0.94	0.91	-0.84, 2.71	4.72 (2)	.094
Baseline distress	0.37	0.95	-1.49, 2.23	4.10 (2)	.129
Changed Meaning of Percepts					
Age (years)	0.18	0.16	-0.14, 0.50	10.07 (2)	.007 [†]
Sex (male)	-0.44	2.25	-4.85, 3.97	4.01 (2)	.135
Previous meditation (hours)	-0.01	0.06	-0.12, 0.10	1.82 (2)	.403
Disability (yes)	-0.87	3.02	-6.79, 5.04	0.08 (2)	.961
Nationality (international)	2.82	3.64	-4.32, 9.95	2.03 (2)	.362
Ethnicity (other than white)	2.14	3.55	-4.82, 9.11	0.65 (2)	.721
Spirituality	0.97	1.74	-2.44, 4.38	0.51 (2)	.774
Baseline distress	1.94	1.90	-1.78, 5.65	1.20 (2)	.548

B: marginal effects. SE: (Robust) Standard Error. 95% CI: 95% Confidence Interval. p: p-value associated with the joint statistical test of significance including the parameters of the two-part model (logit in the first part (zero vs. >zero), and GLM with a log link and gamma distribution in the second part (>zero)). [†]This relationship was no longer significant when the Benjamini-Hochberg correction was applied to correct for multiple comparisons.

Supplemental Table 13. Presence (vs zero values) of ASCs as a potential predictor of psychological distress.

	Coefficient	95% CI	p
Psychological distress			
<i>Experience of Unity</i>	-0.003	-0.21, 0.21	.981
<i>Spiritual Experience</i>	0.06	-0.13, 0.25	.544
<i>Blissful State</i>	-0.21	-0.43, 0.01	.063
<i>Insightfulness</i>	-0.09	-0.31, 0.12	.397
<i>Disembodiment</i>	0.01	-0.19, 0.20	.938
<i>Impaired Control and Cognition</i>	0.10	-0.10, 0.30	.330
<i>Anxiety</i>	0.32	0.12, 0.52	.002
<i>Complex Imagery</i>	-0.07	-0.26, 0.12	.470
<i>Elementary Imagery</i>	0.001	-0.18, 0.18	.994
<i>Audio-Visual Synesthesia</i>	0.19	-0.04, 0.42	.110
<i>Changed Meaning of Percepts</i>	0.02	-0.17, 0.21	.823

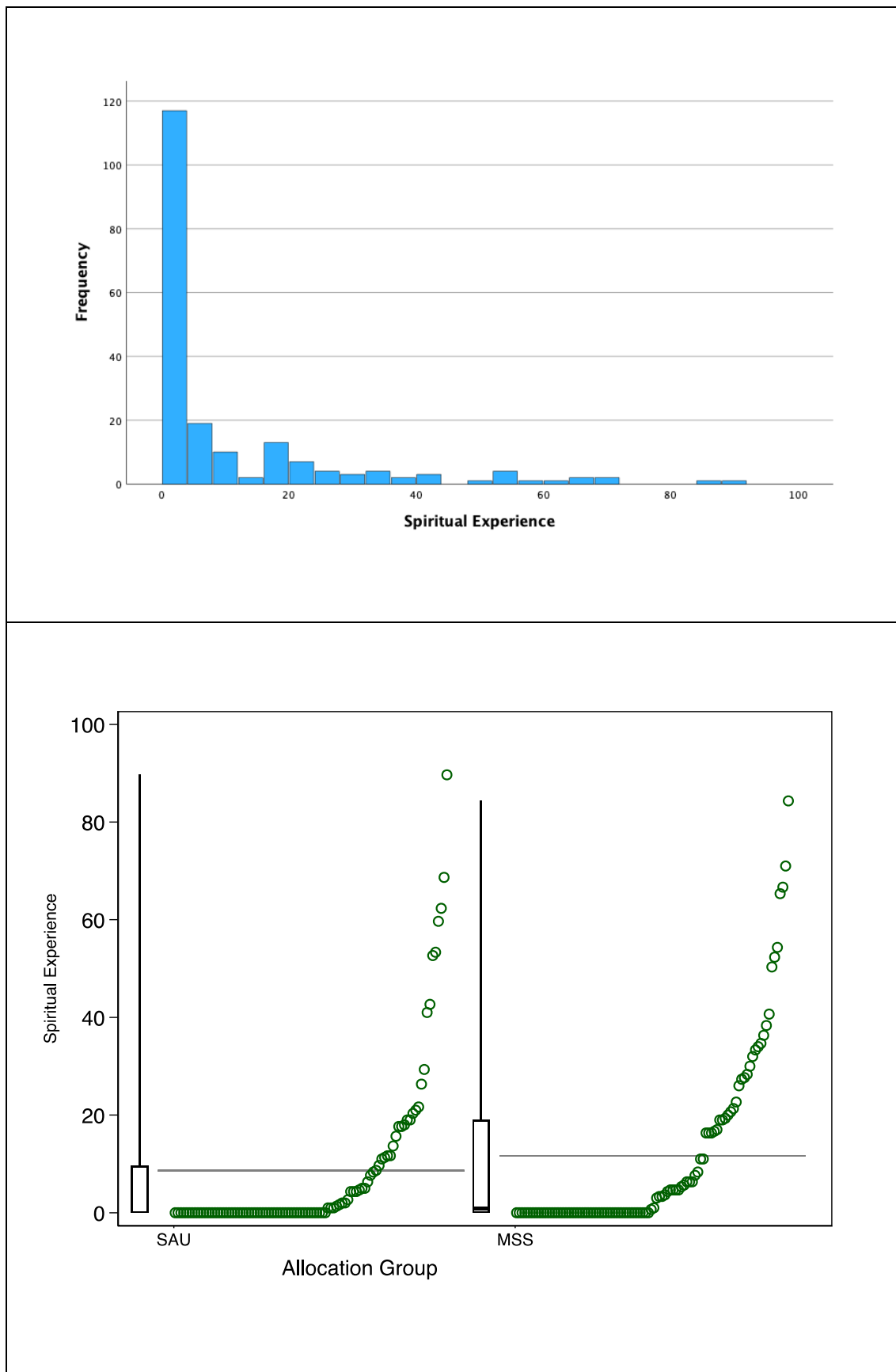
R² (adjusted) = 0.08 (F (df) = 2.69 (11); p = .003. Durbin-Watson = 1.88. Tolerance (range) = 0.50, 0.68. The relationship between anxiety and psychological distress at 1-year follow-up was still significant when the Benjamini-Hochberg correction was applied to adjust for multiple comparisons.

Supplemental Figures

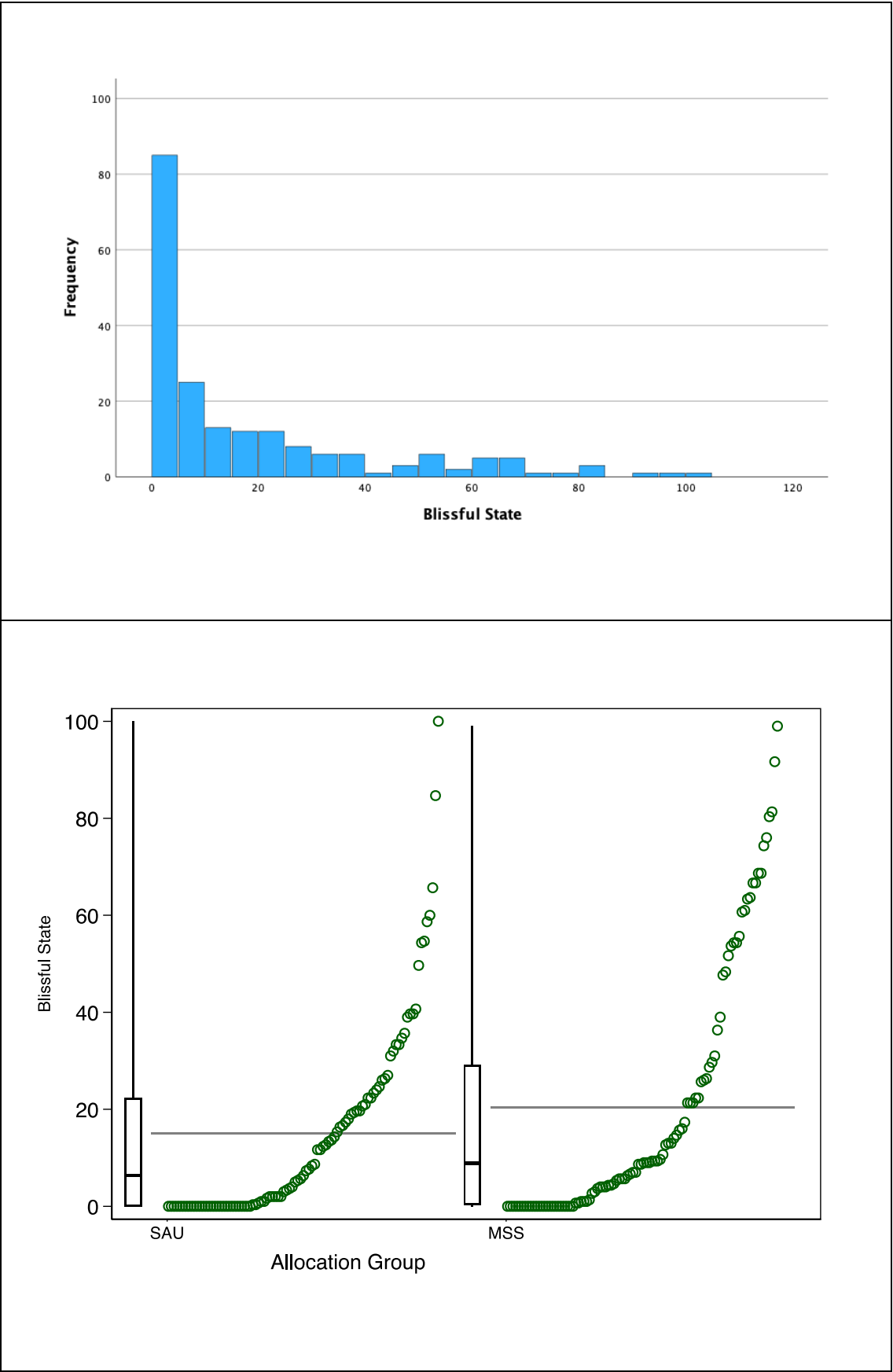
The top plot is a histogram showing the frequency of 'Experience of Unity'. The x-axis ranges from 0 to 100, and the y-axis (Frequency) ranges from 0 to 120. The distribution is highly right-skewed, with a peak frequency of approximately 125 at 0. The frequency drops sharply for higher values, with a few small bars extending up to 85.

The bottom plot is a box plot comparing the 'Experience of Unity' for two allocation groups: SAU and MSS. The y-axis ranges from 0 to 80. For the SAU group, the median is approximately 4, the interquartile range (IQR) is from 0 to 5, and the whiskers extend from 0 to 78. For the MSS group, the median is approximately 4, the IQR is from 0 to 13, and the whiskers extend from 0 to 82. Both groups show a large number of outliers, represented by green circles, with values ranging from approximately 20 to 80. The distribution for both groups is right-skewed.

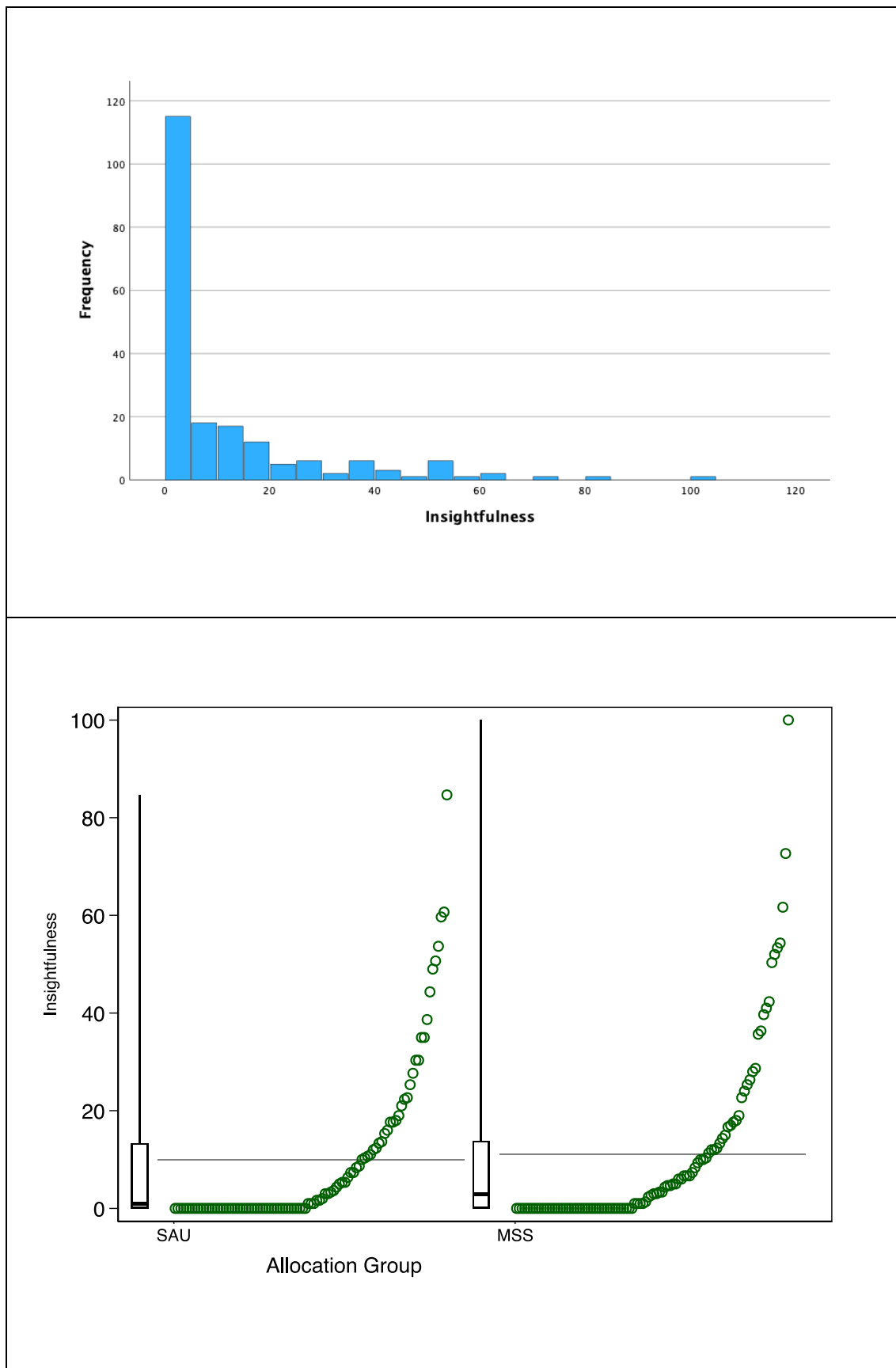
Supplemental Figure S2: Spiritual Experience



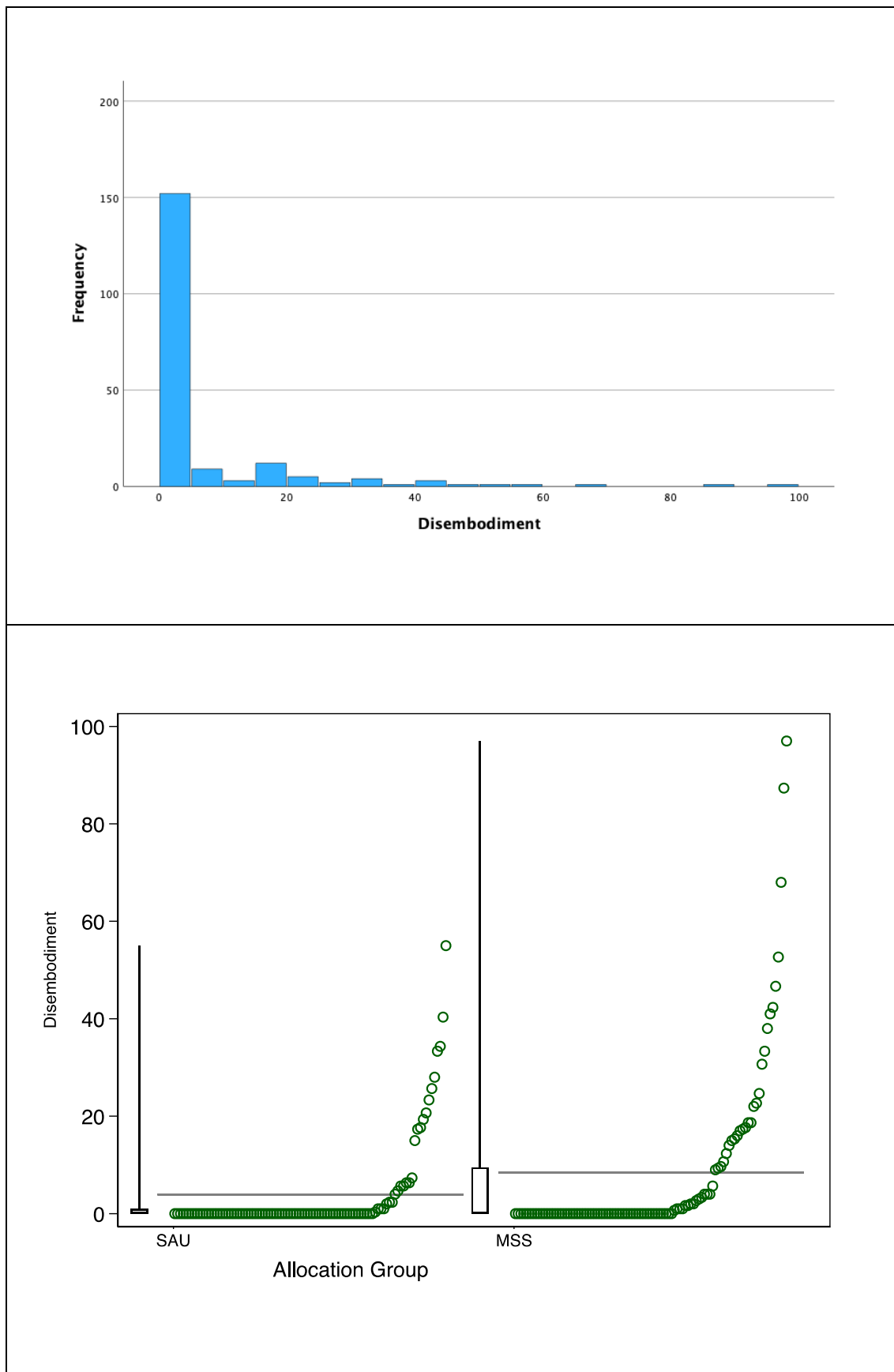
Supplemental Figure S3: Blissful State



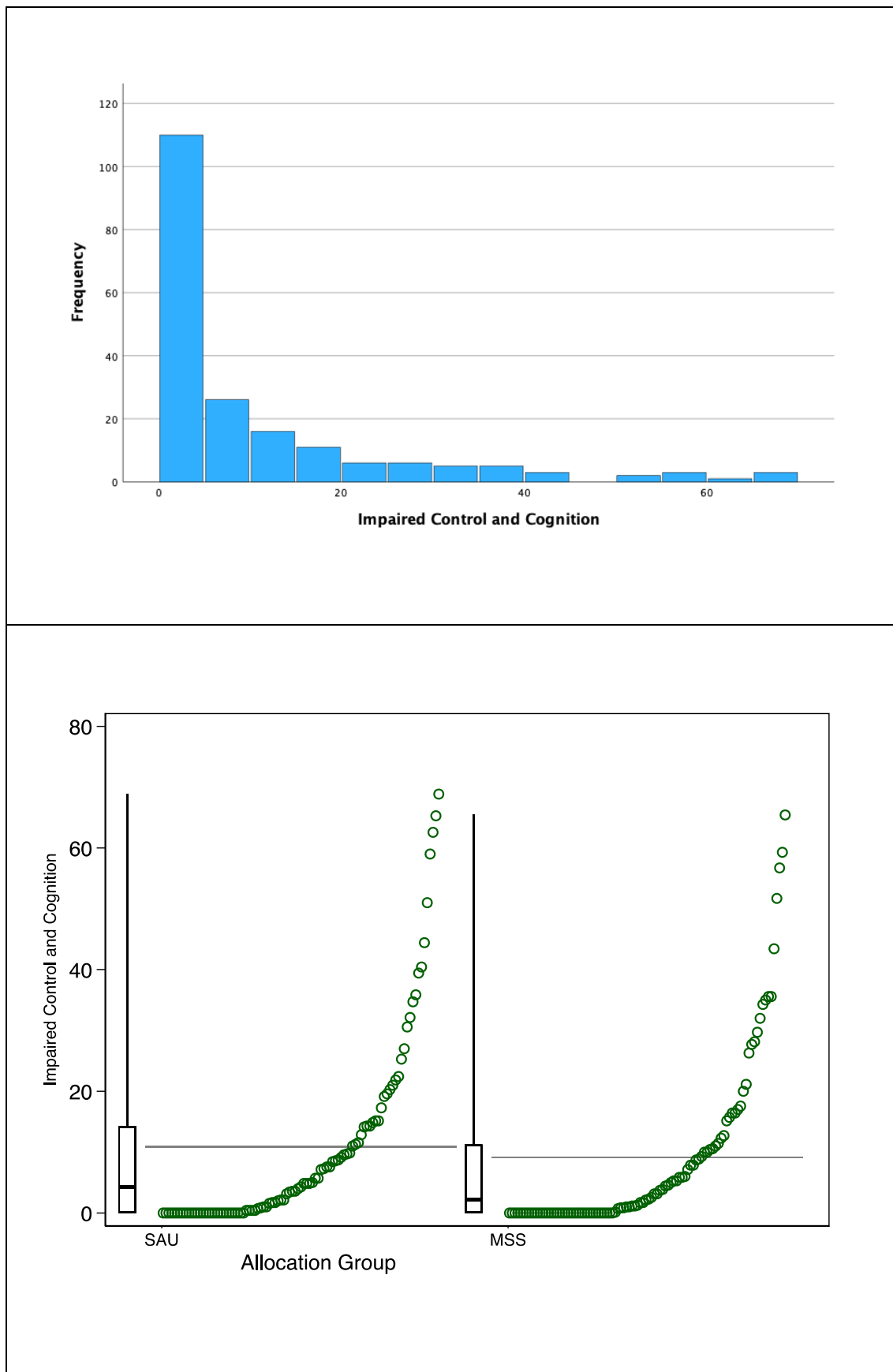
Supplemental Figure S4: Insightfulness



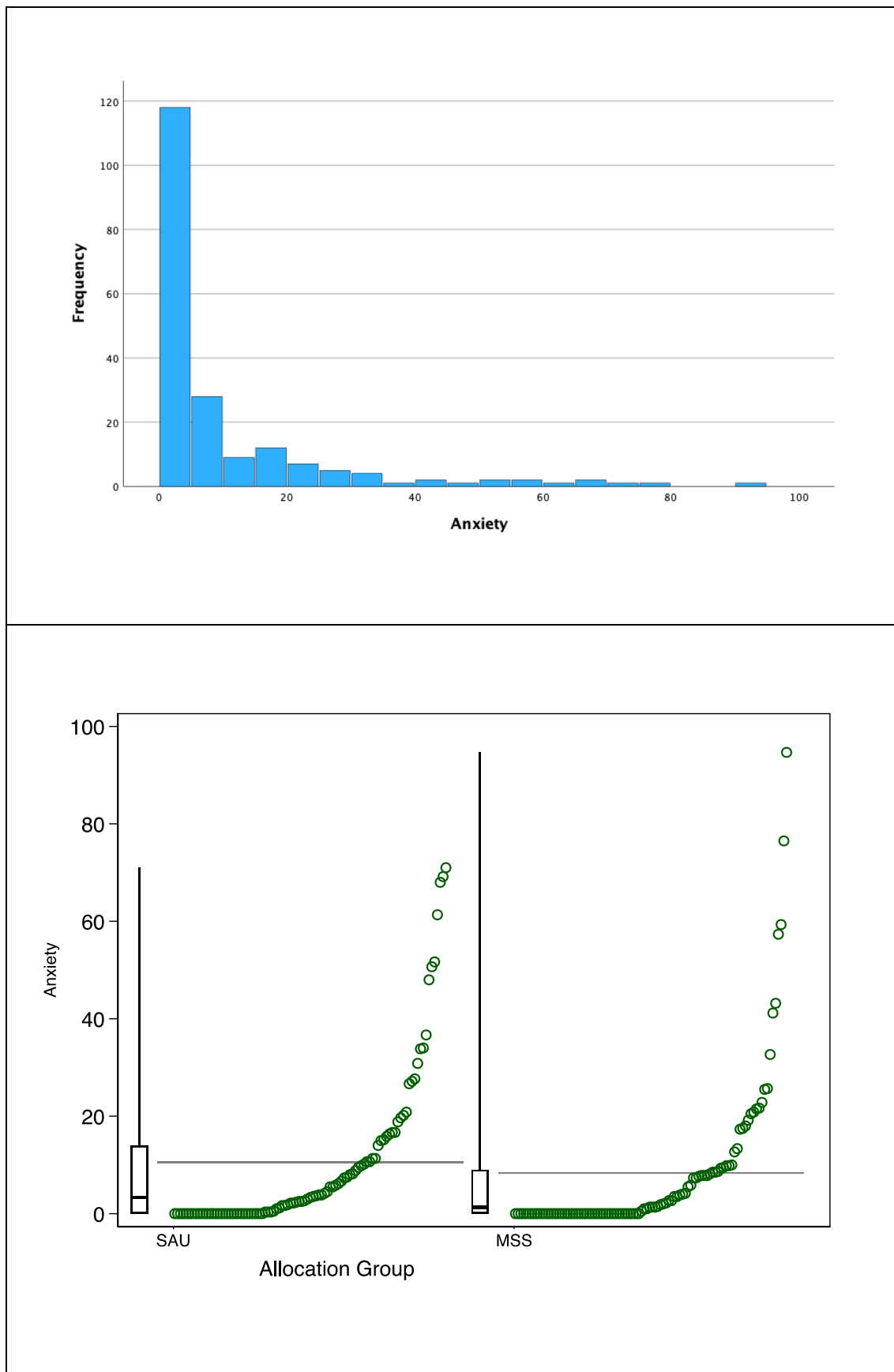
Supplemental Figure S5: Disembodiment



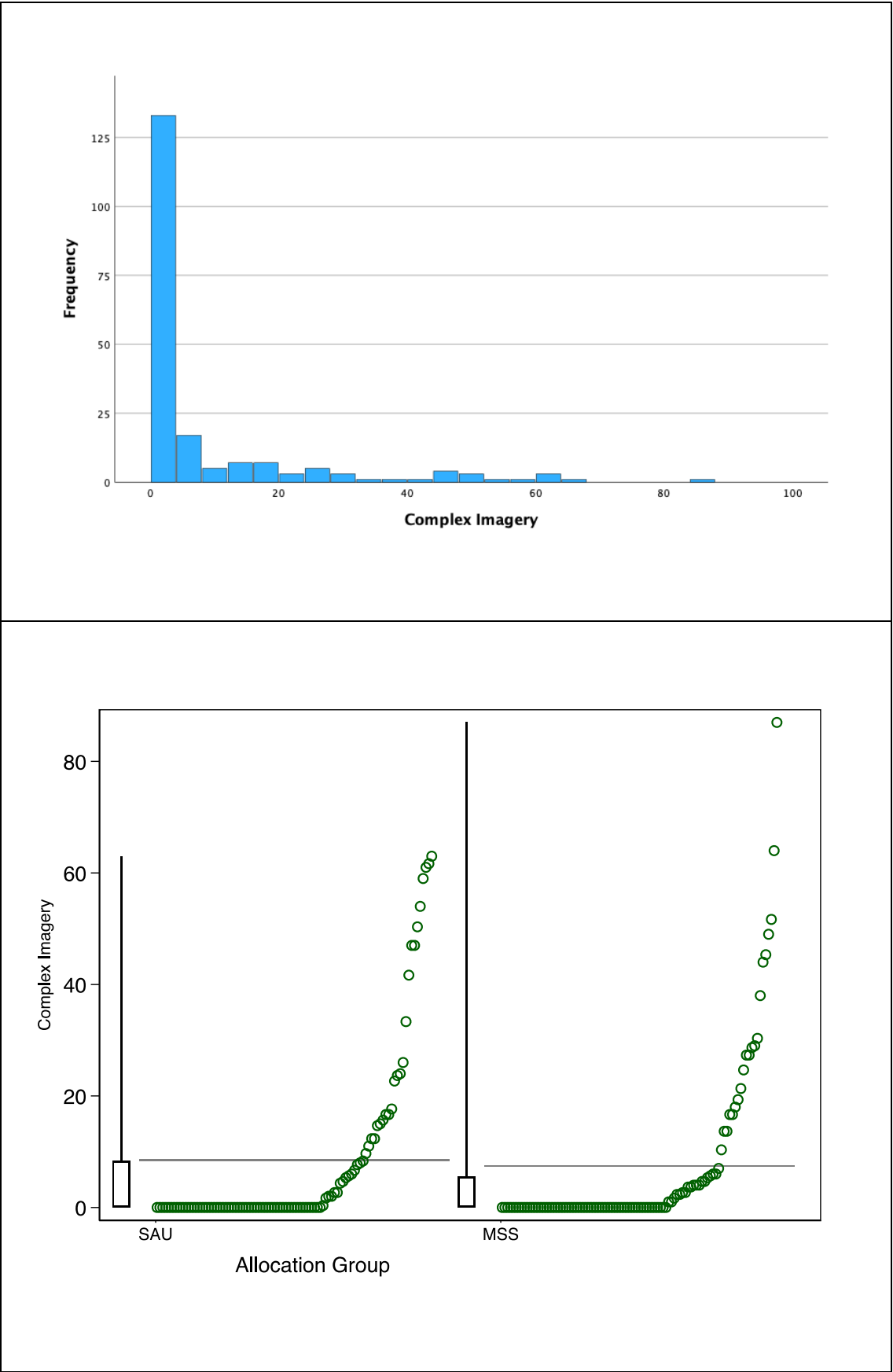
Supplemental Figure S6: Impaired Control and Cognition



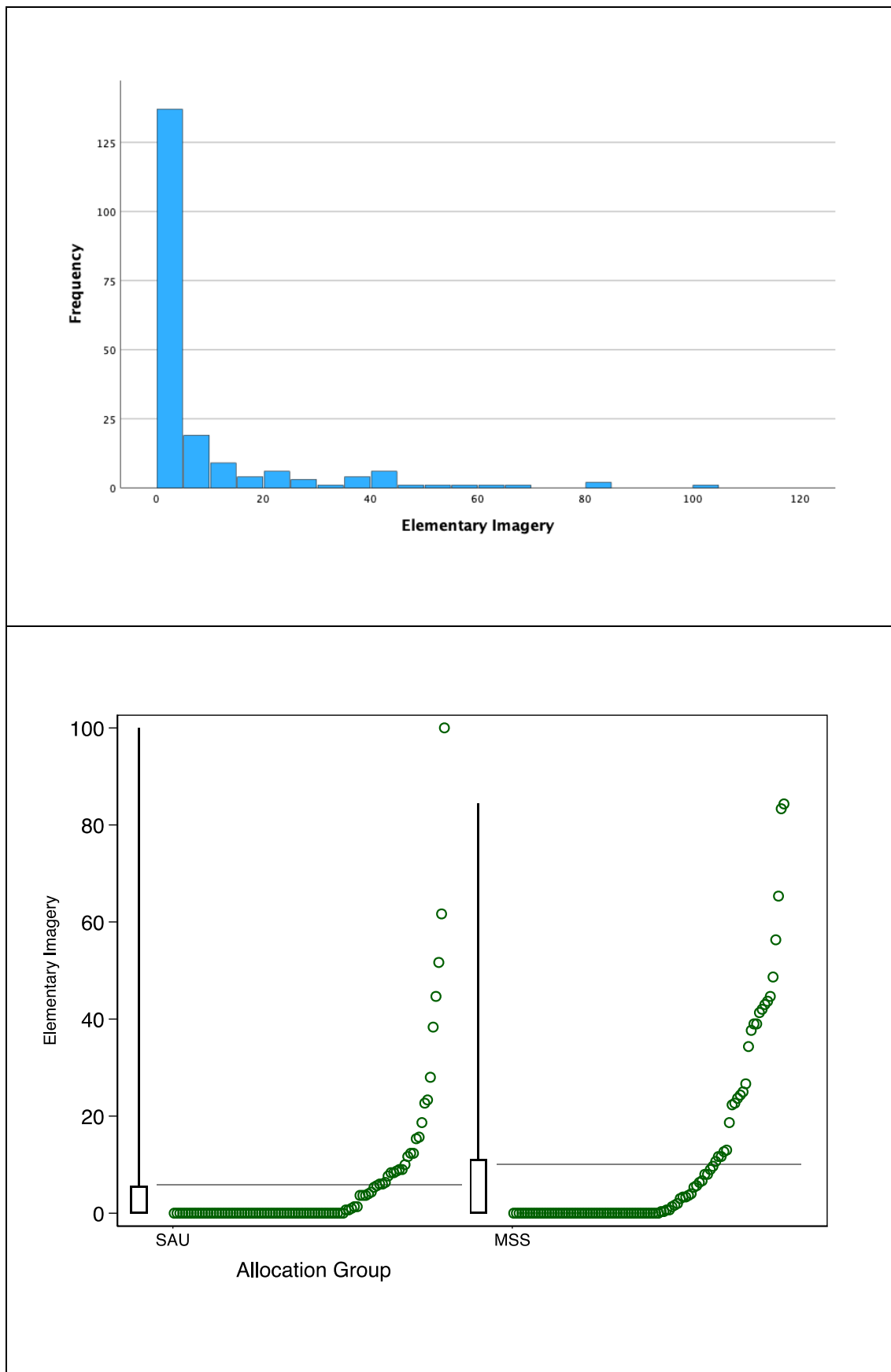
Supplemental Figure S7: Anxiety



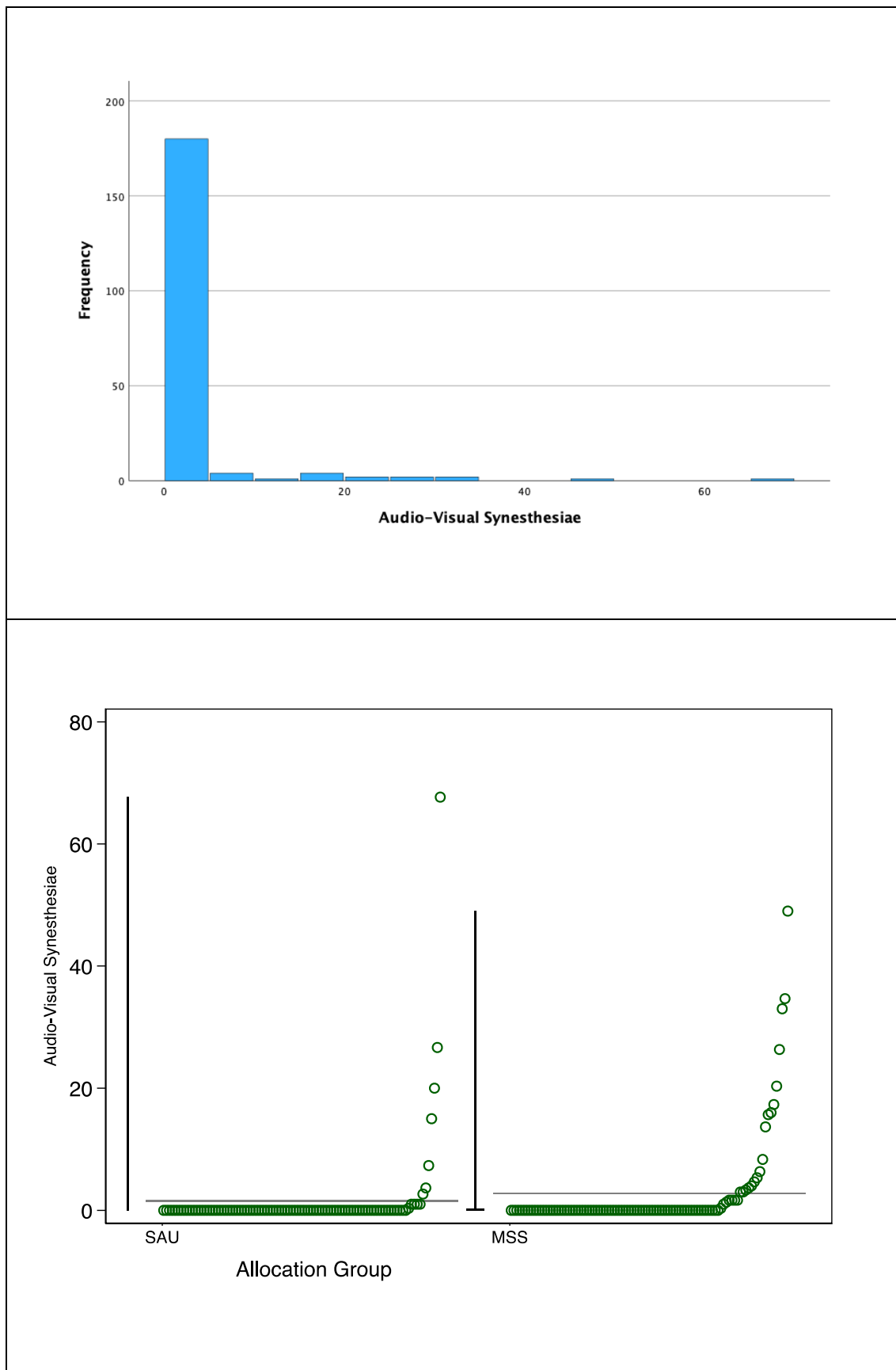
Supplemental Figure S8: Complex Imagery



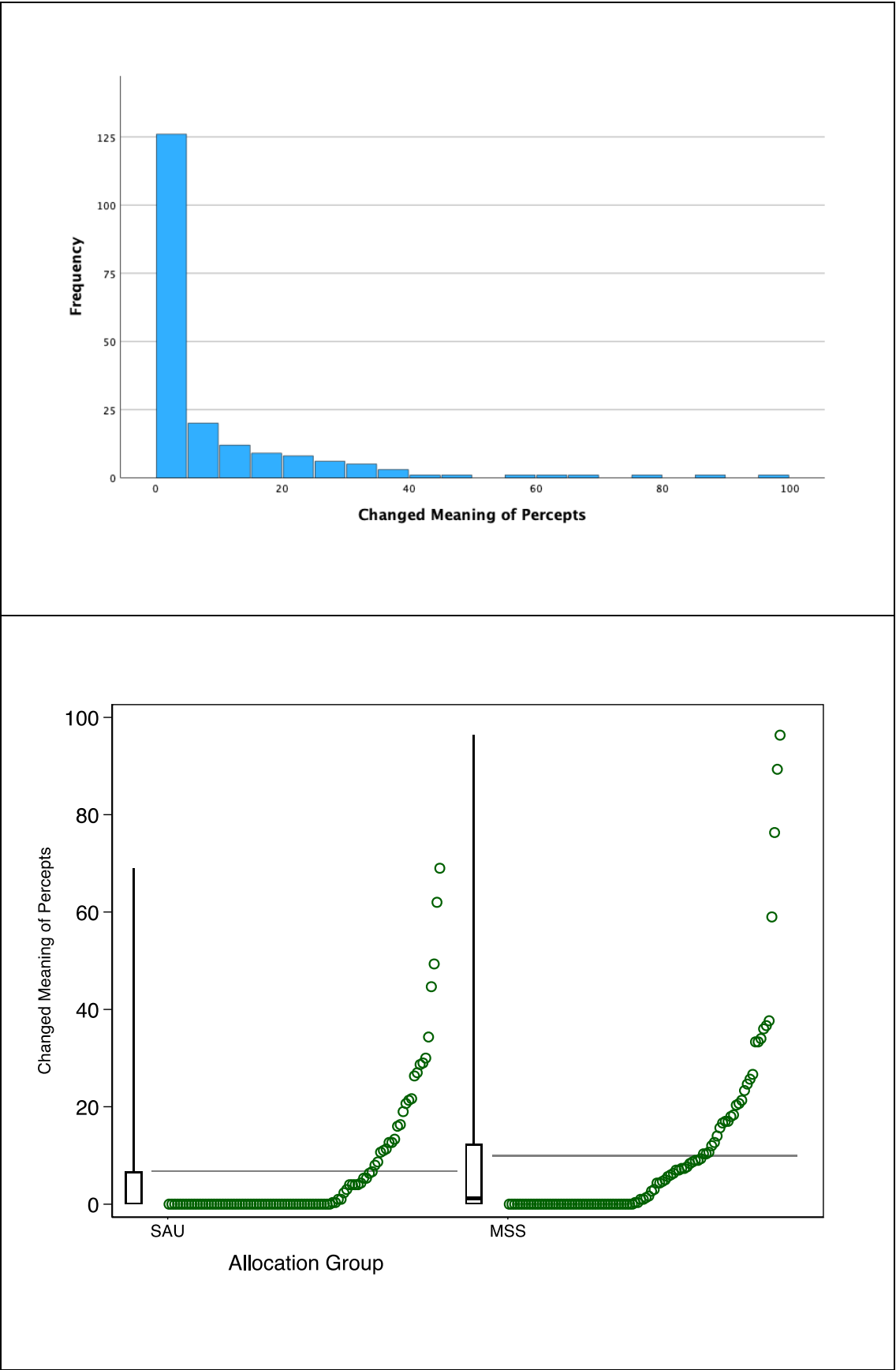
Supplemental Figure S9: Elementary Imagery



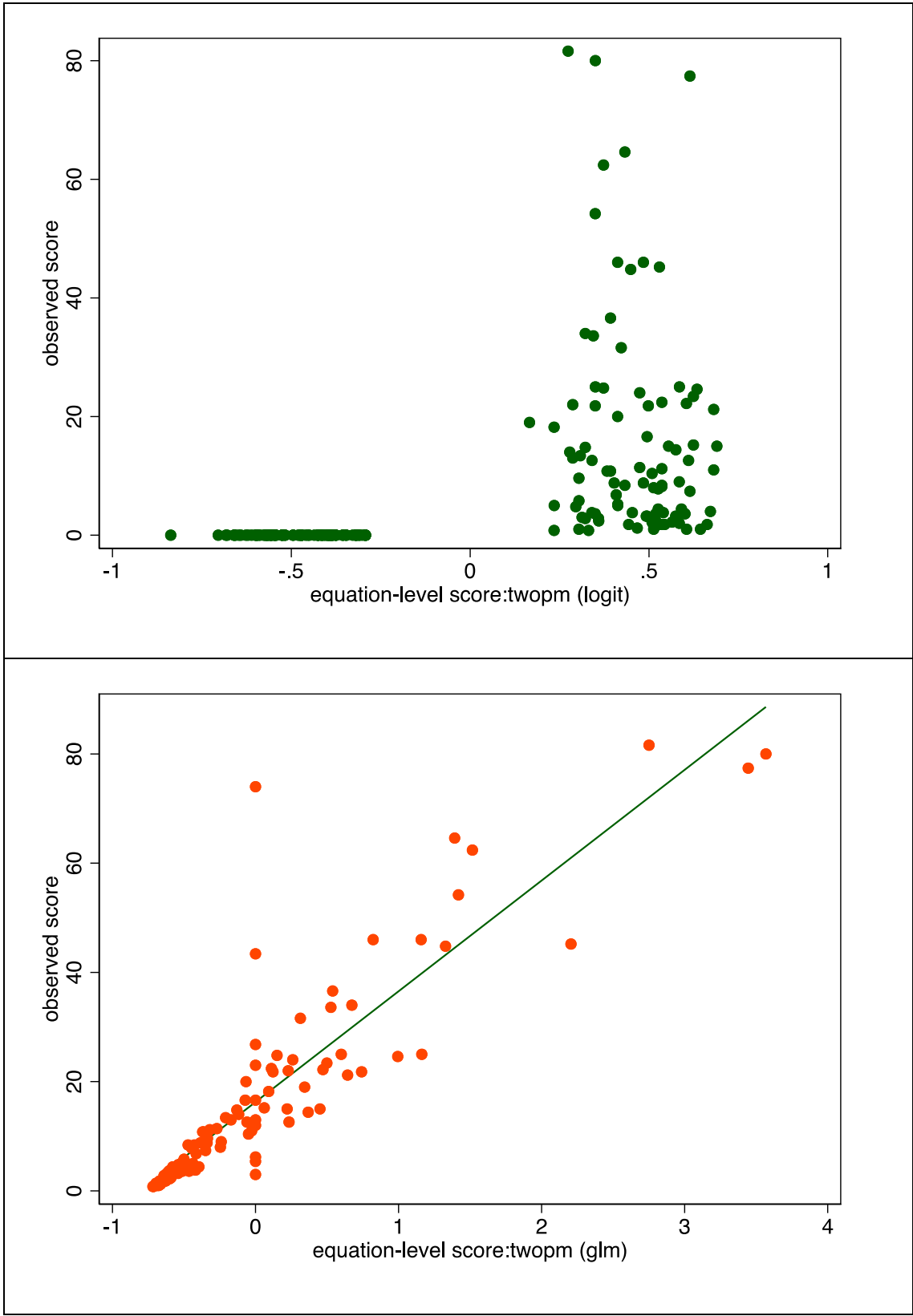
Supplemental Figure S10: Audio-Visual Synesthesiae



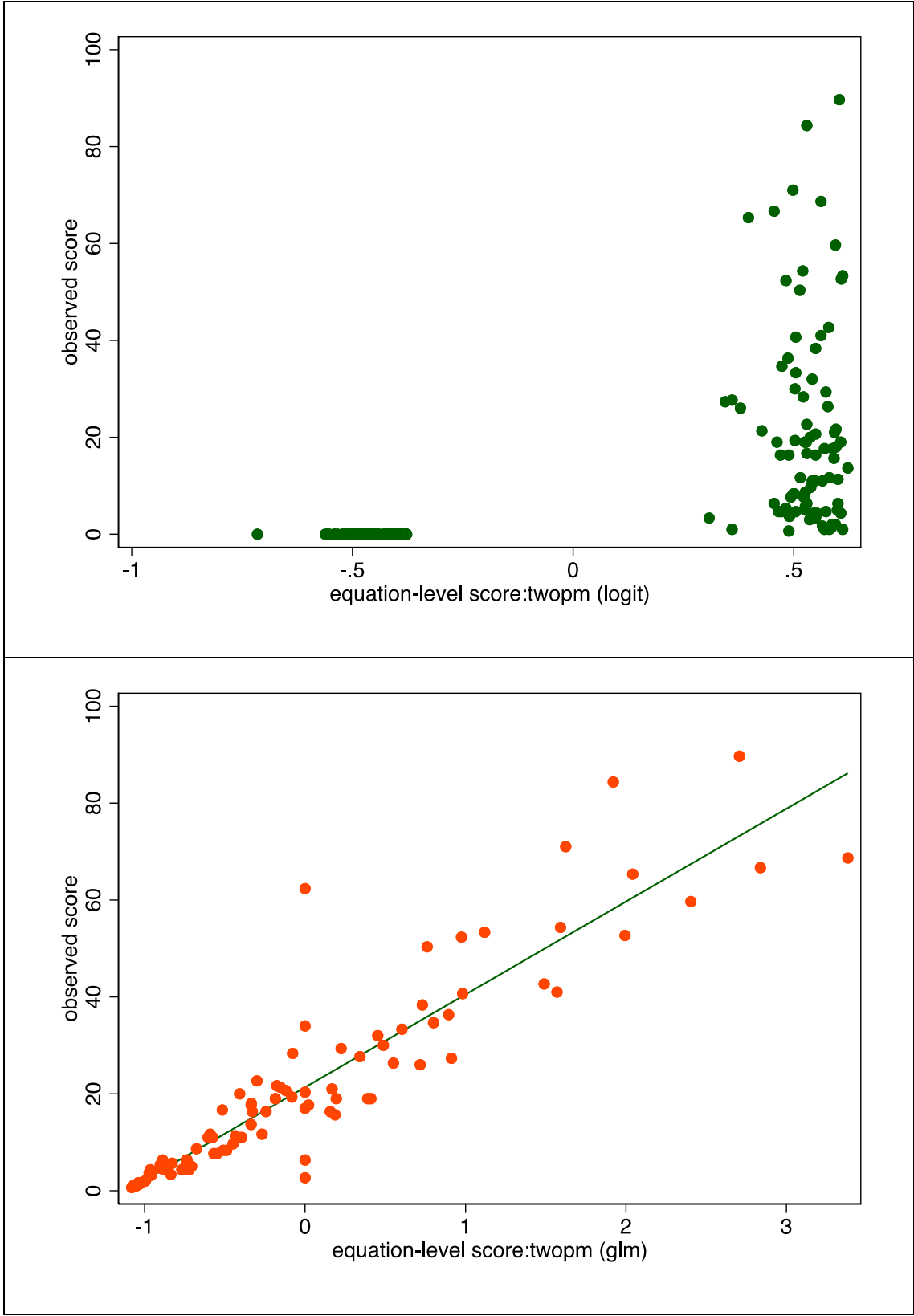
Supplemental Figure S11: Changed Meaning of Percepts



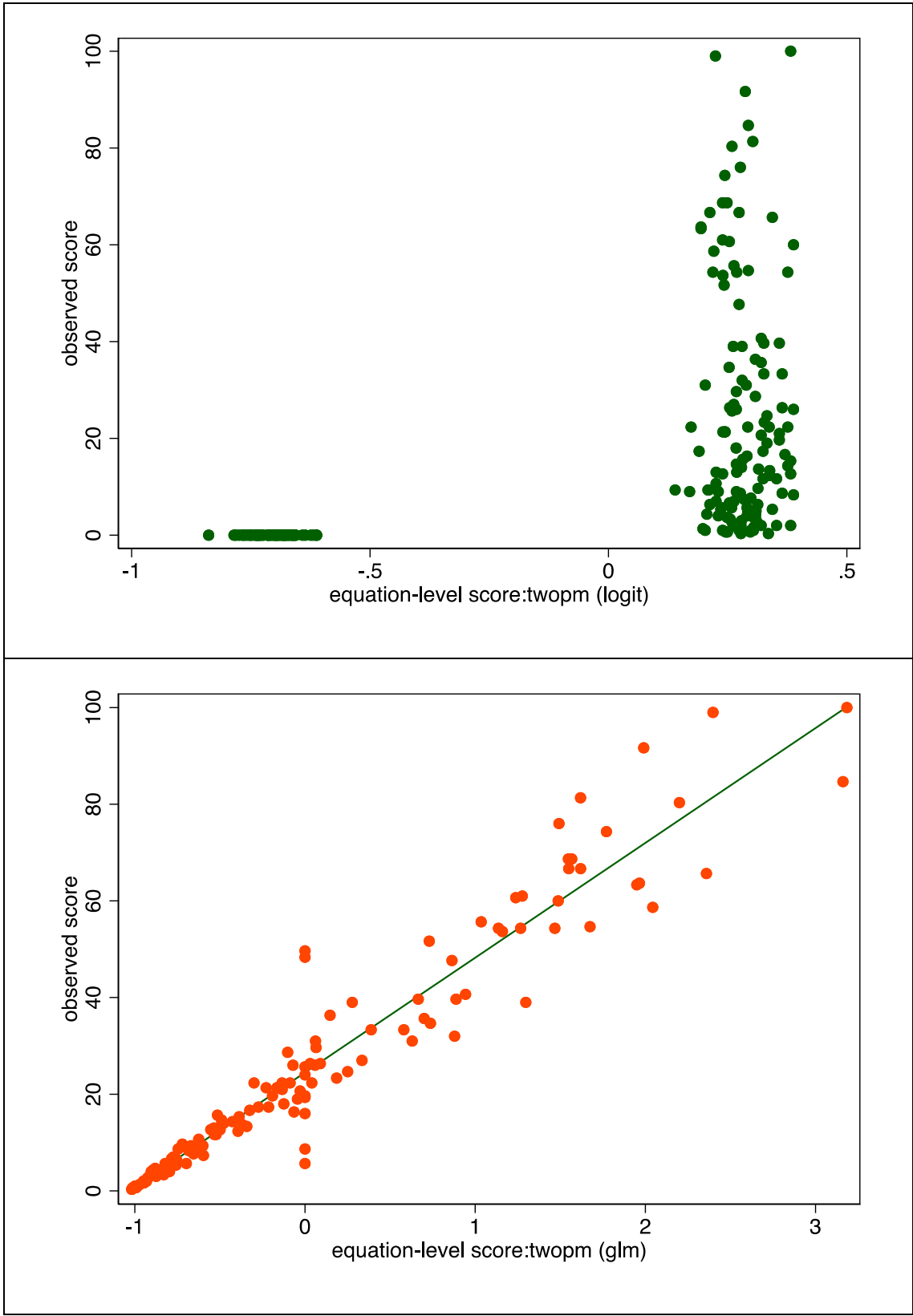
Supplemental Figure S12: relationships between the observed and predicted values for Experience of Unity (allocation group model)



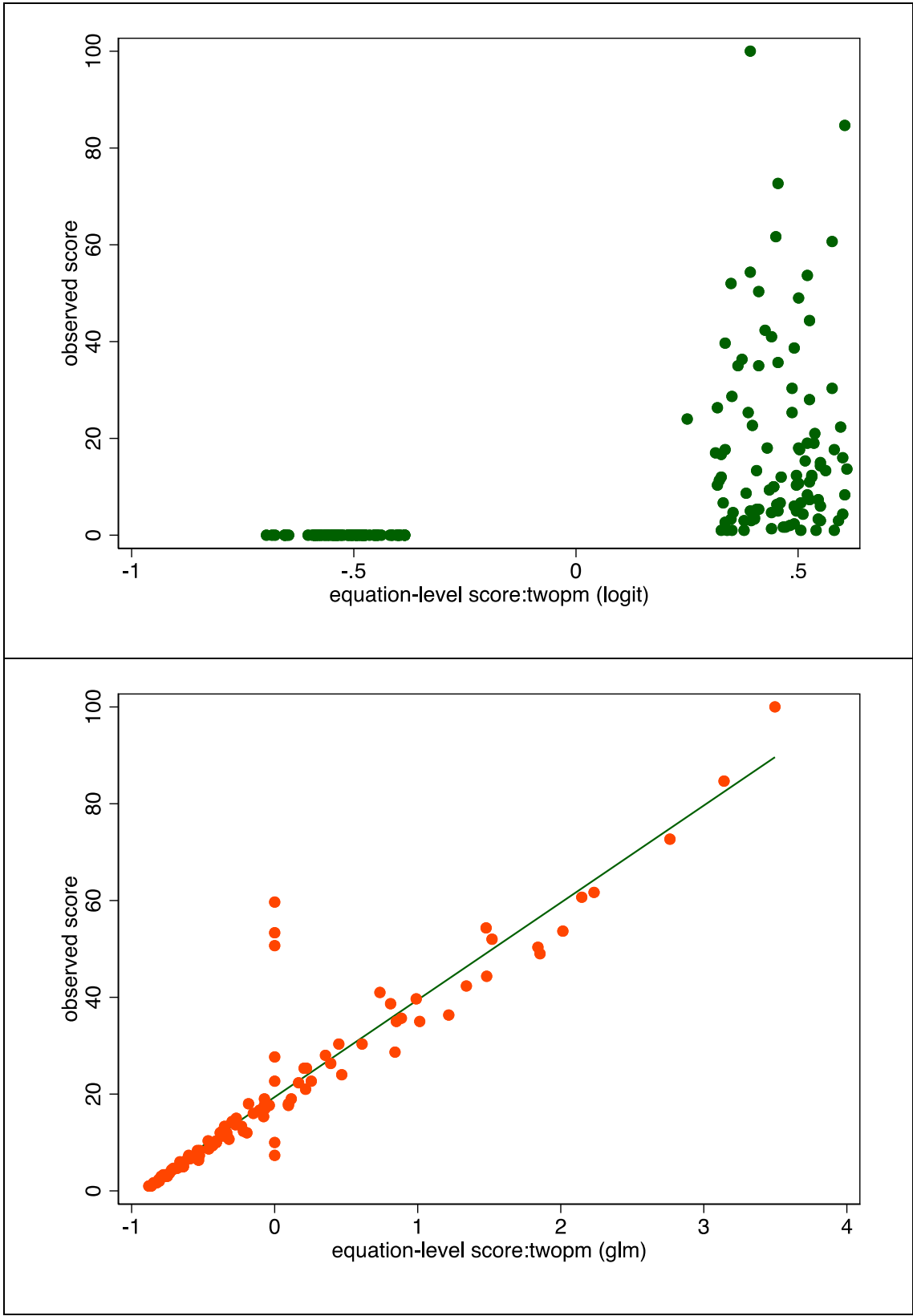
Supplemental Figure S13: relationships between the observed and predicted values for Spiritual Experience (allocation group model)



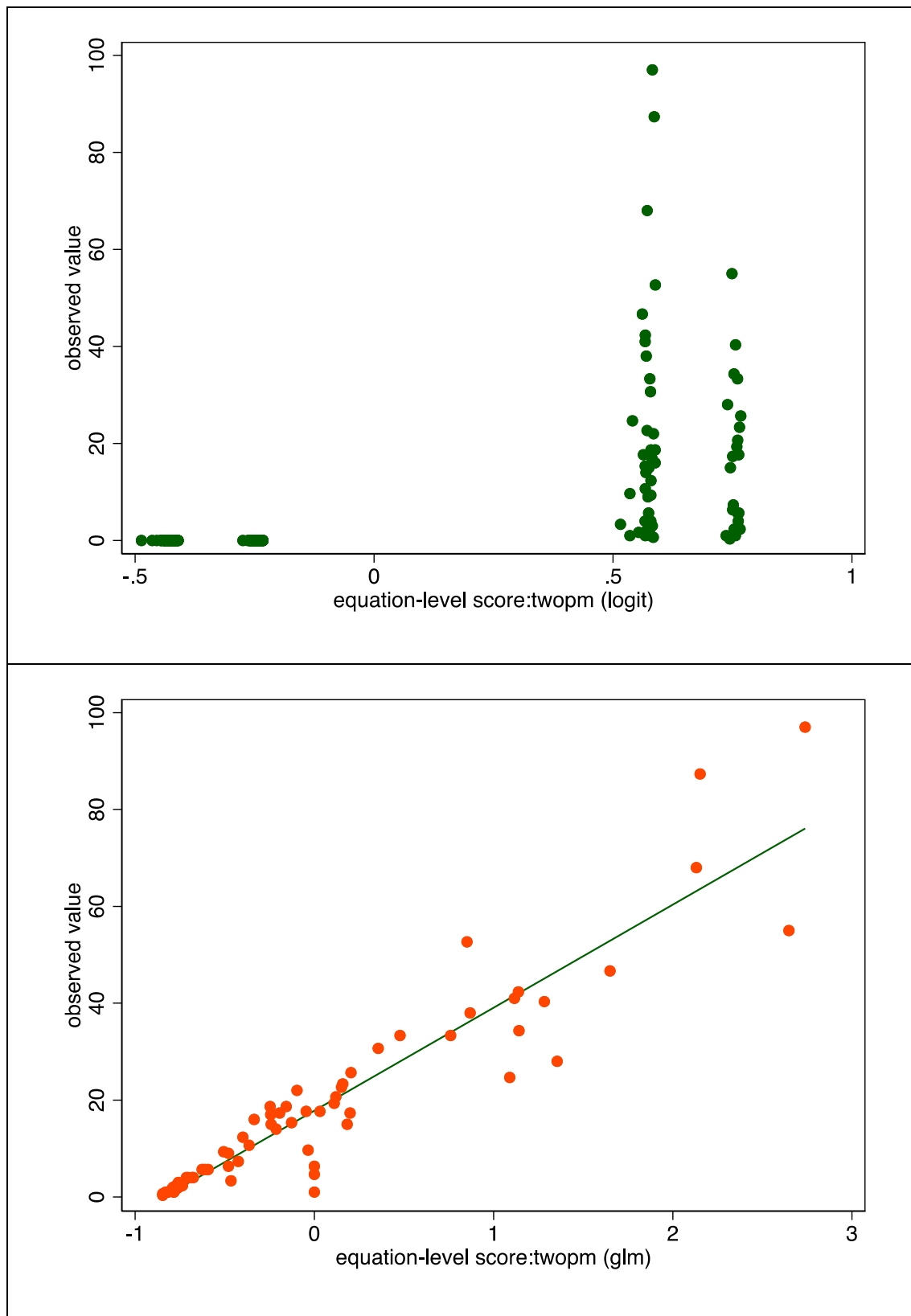
Supplemental Figure S14: relationships between the observed and predicted values for Blissful State (allocation group model)



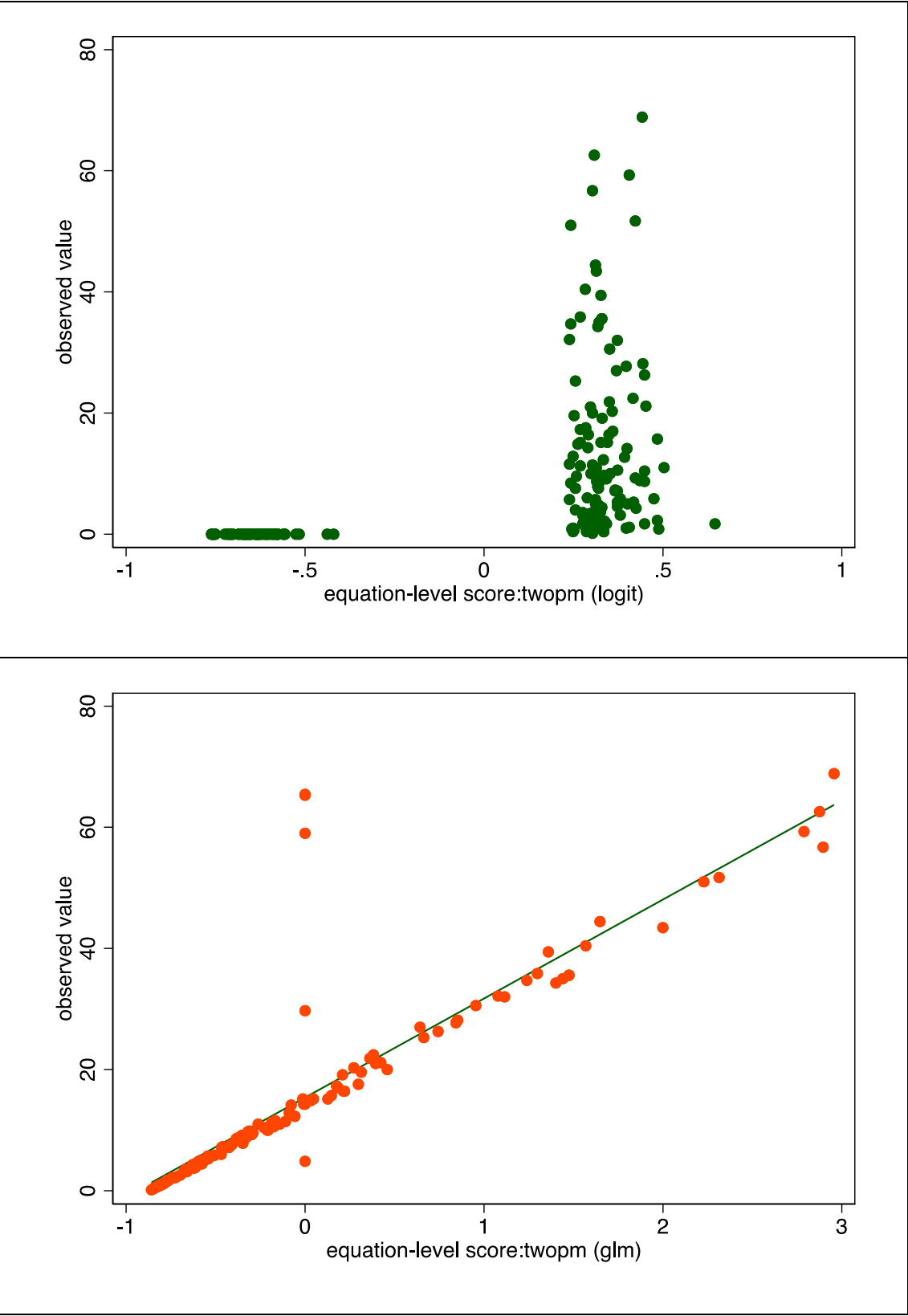
Supplemental Figure S15: relationships between the observed and predicted values for Insightfulness (allocation group model)



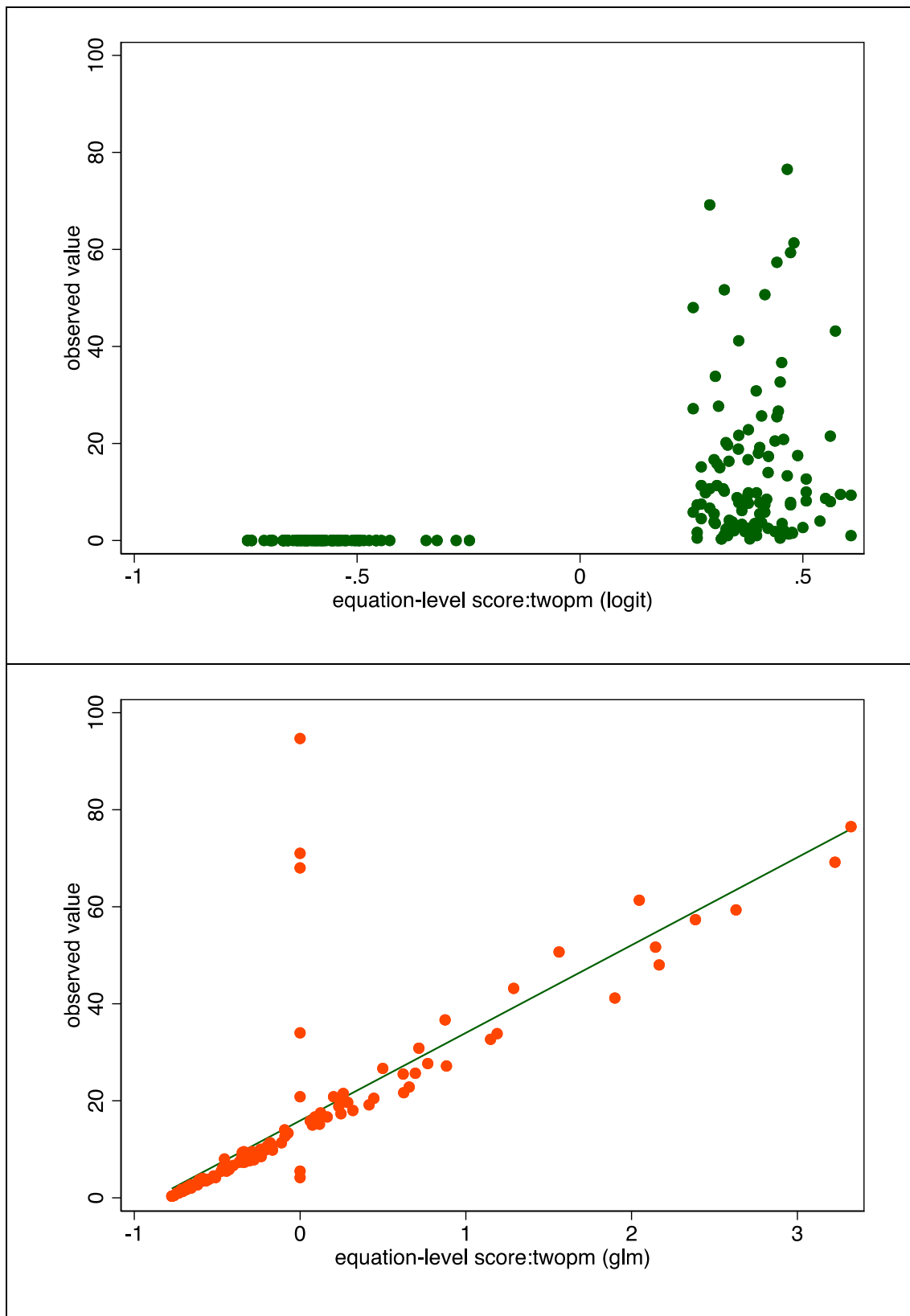
Supplemental Figure S16: relationships between the observed and predicted values for Disembodiment (allocation group model)



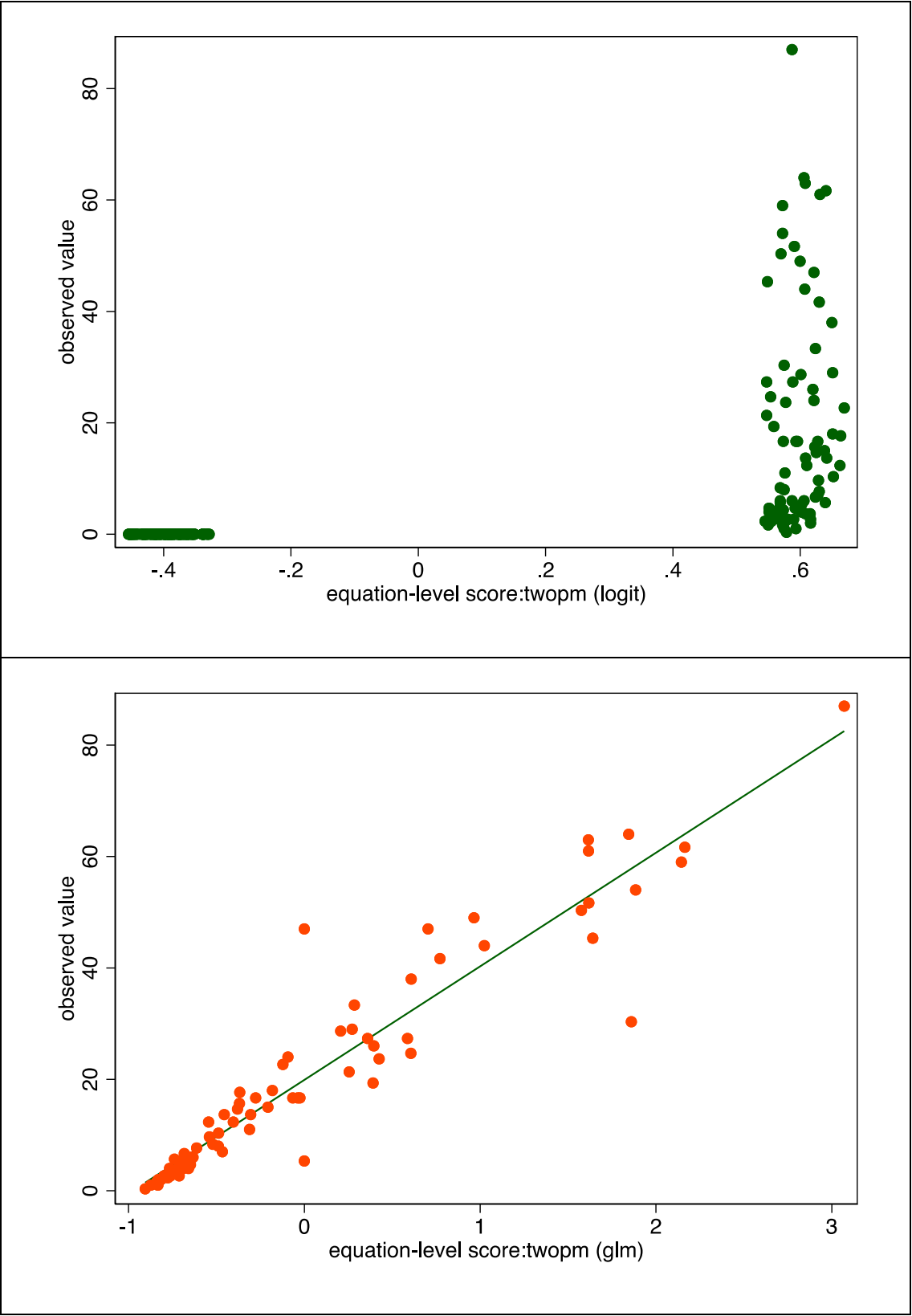
Supplemental Figure S17: relationships between the observed and predicted values for Impaired control & cognition (allocation group model)



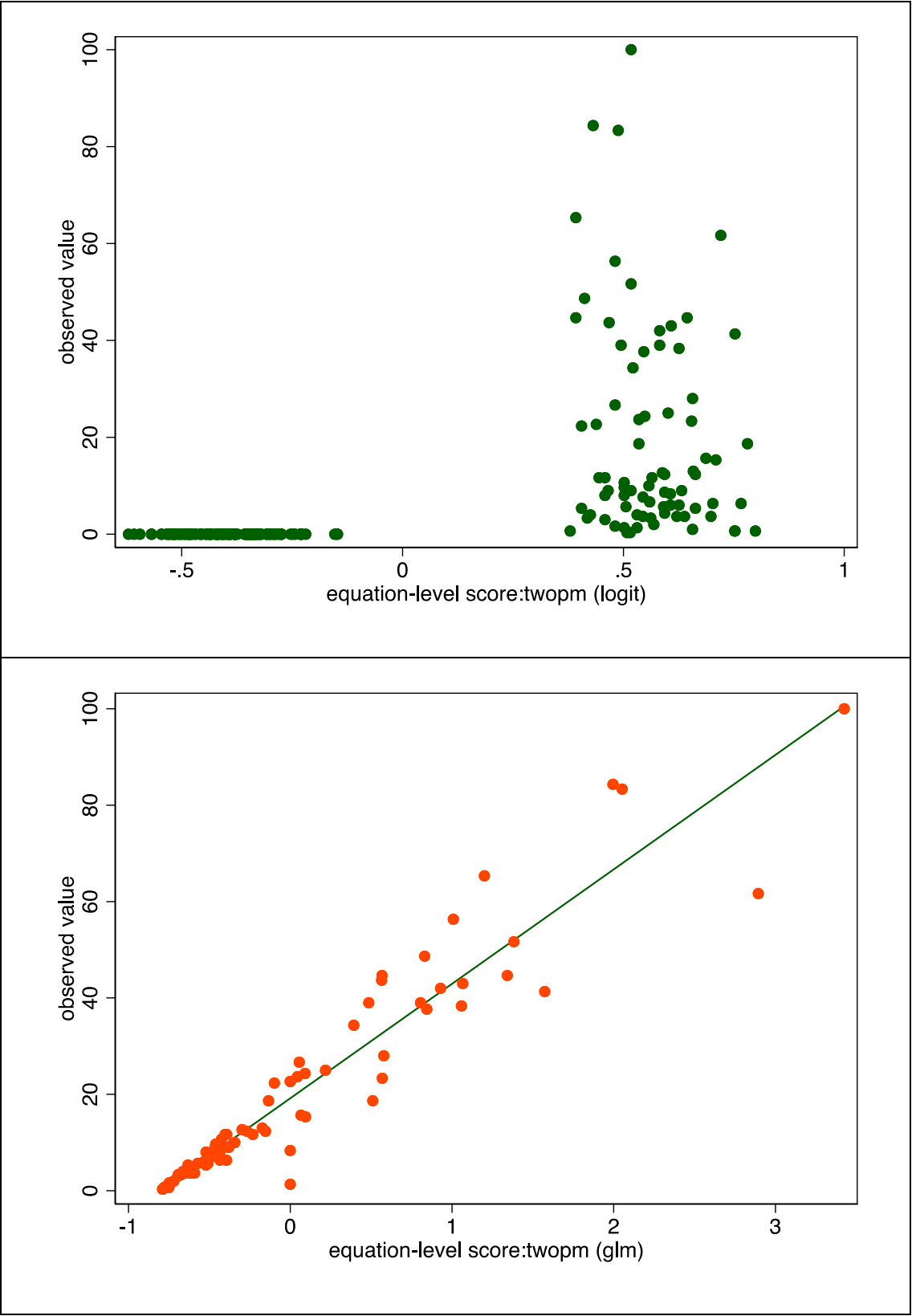
Supplemental Figure S18: relationships between the observed and predicted values for Anxiety
(allocation group model)



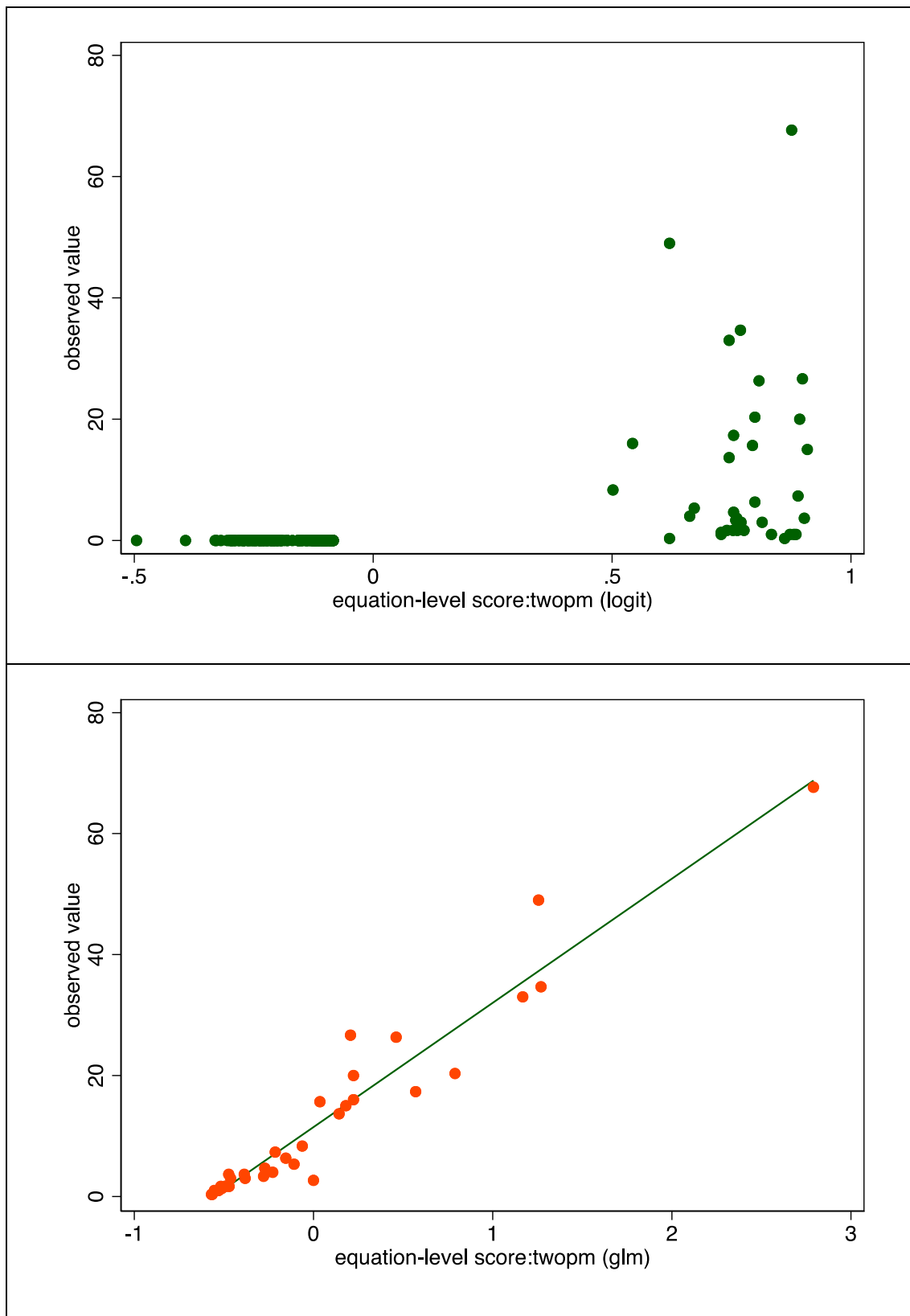
Supplemental Figure S19: relationships between the observed and predicted values for Complex Imagery (allocation group model)



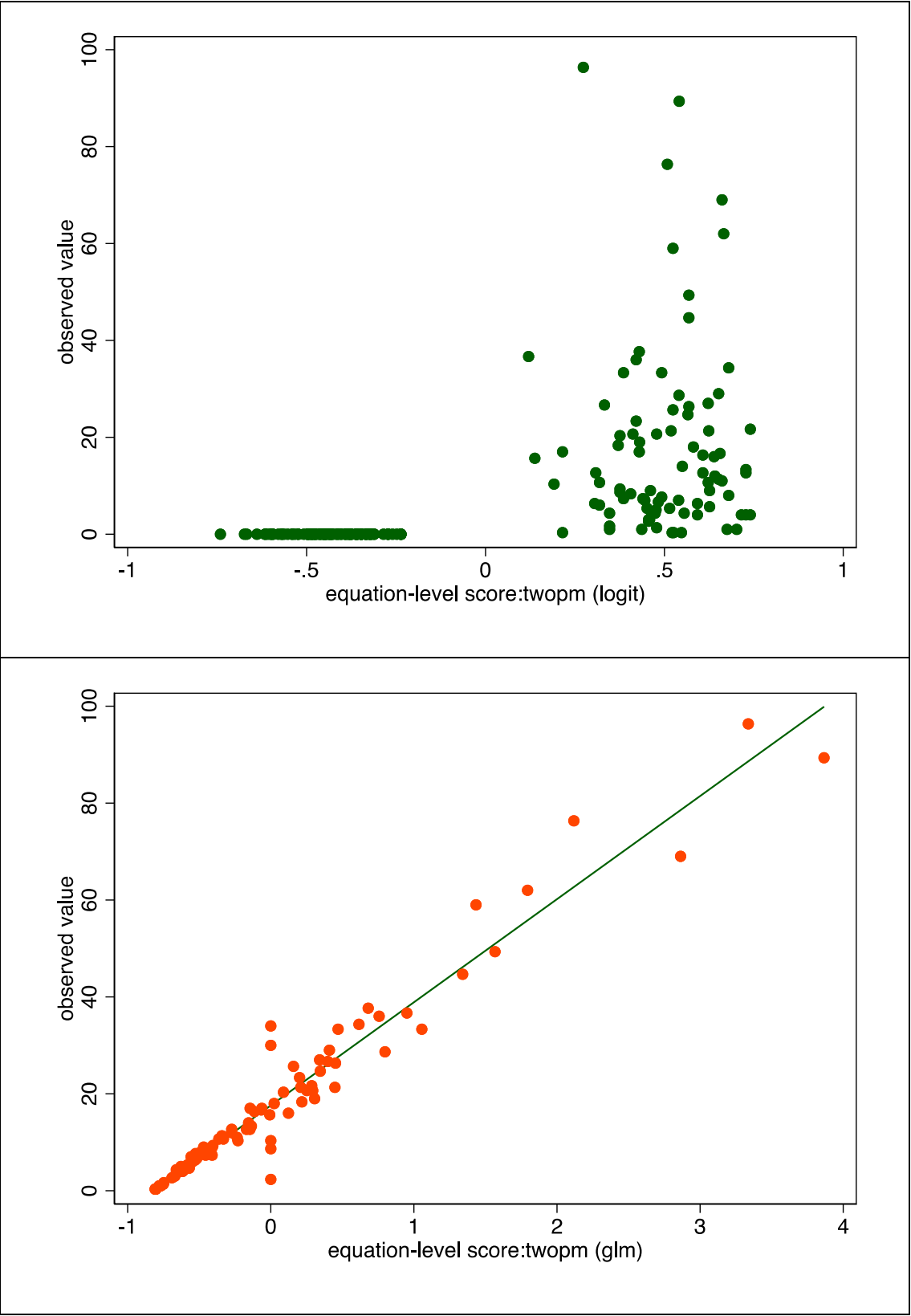
Supplemental Figure S20: relationships between the observed and predicted values for Elementary Imagery (allocation group model)



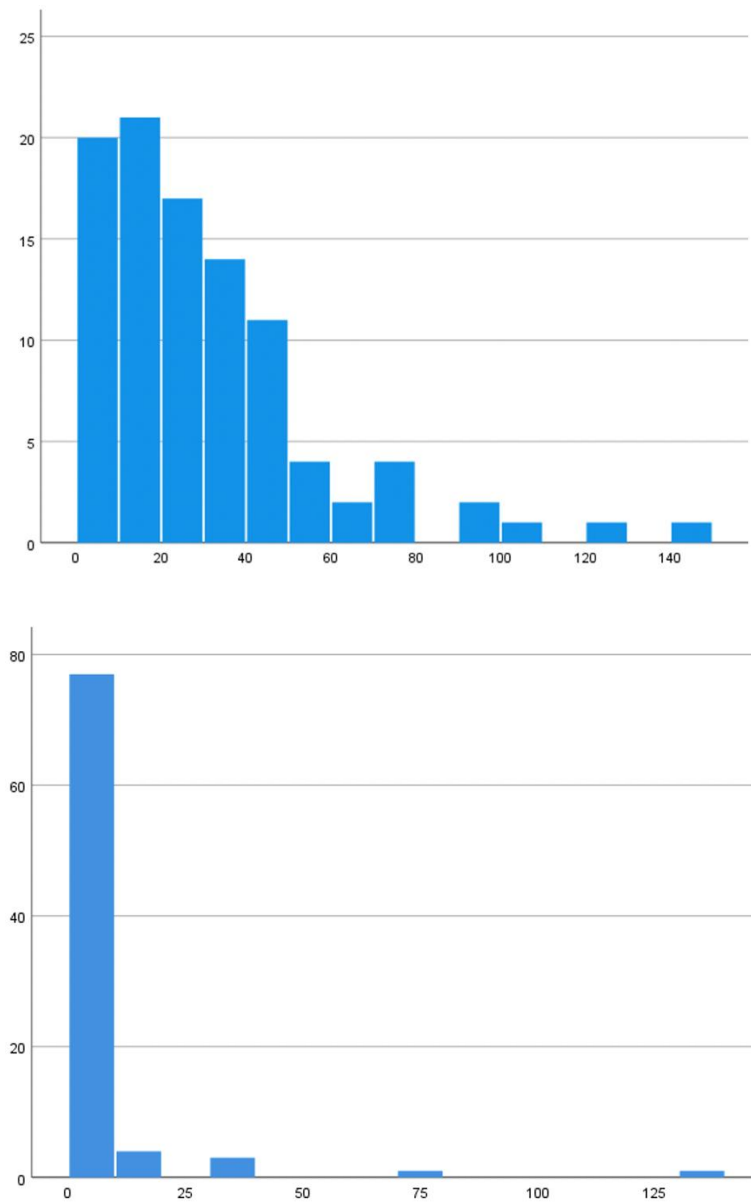
Supplemental Figure S21: relationships between the observed and predicted values for Audiovisual Synesthesiae (allocation group model)



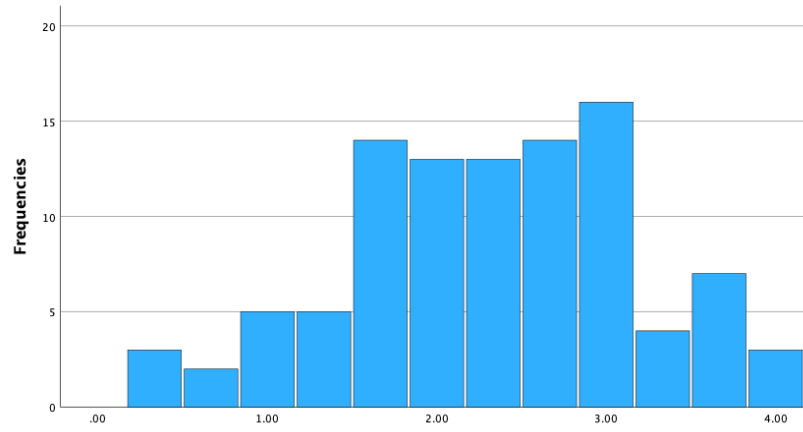
Supplemental Figure S22: relationships between the observed and predicted values for Changed meaning of percepts (allocation group model)



Supplemental Figure S23. Mindfulness meditation practice (hours) during the whole study by group (intervention group above, control group below).

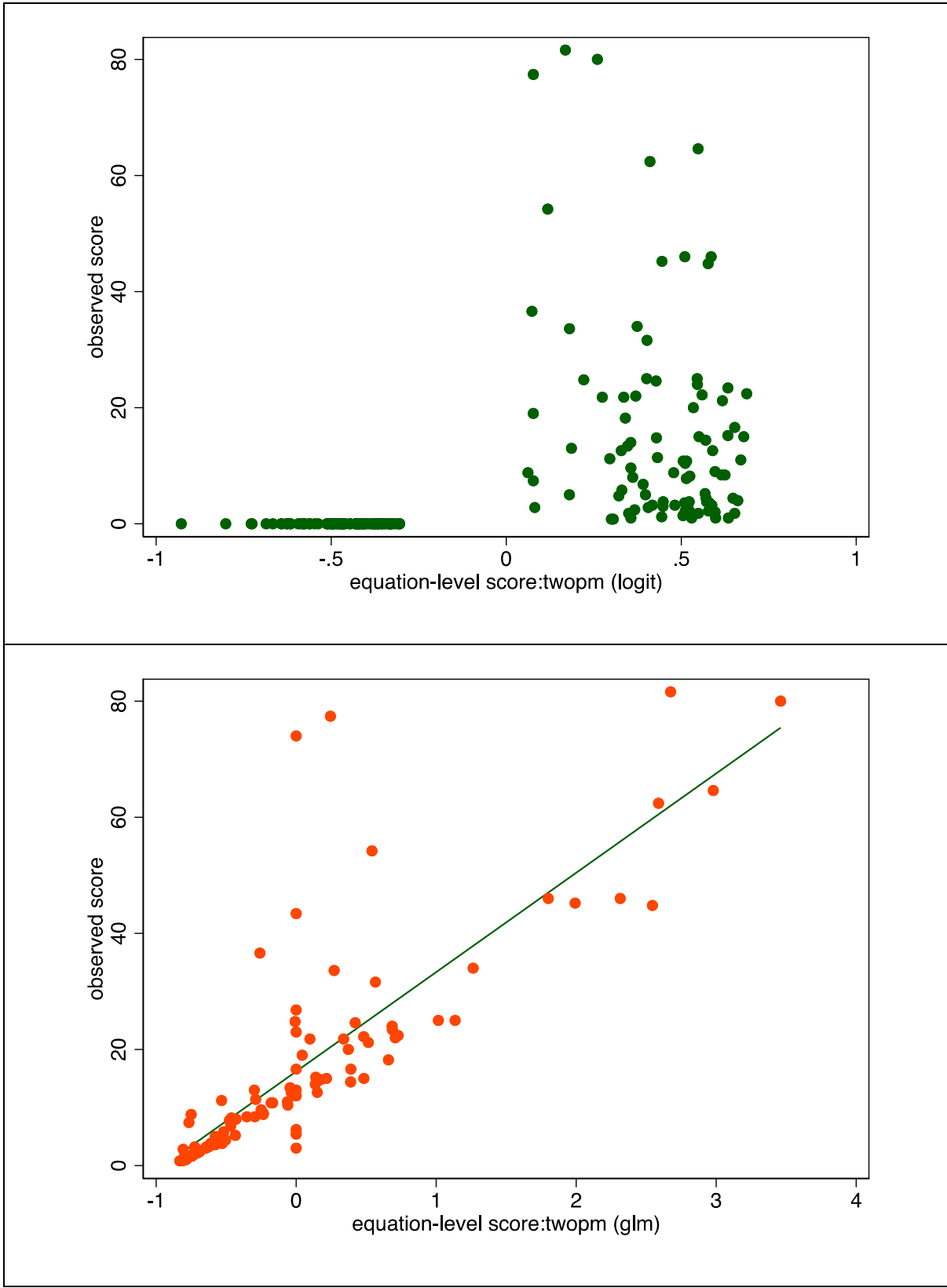


Supplemental Figure S14. Informal mindfulness meditation practice (intervention arm, $n = 99$).

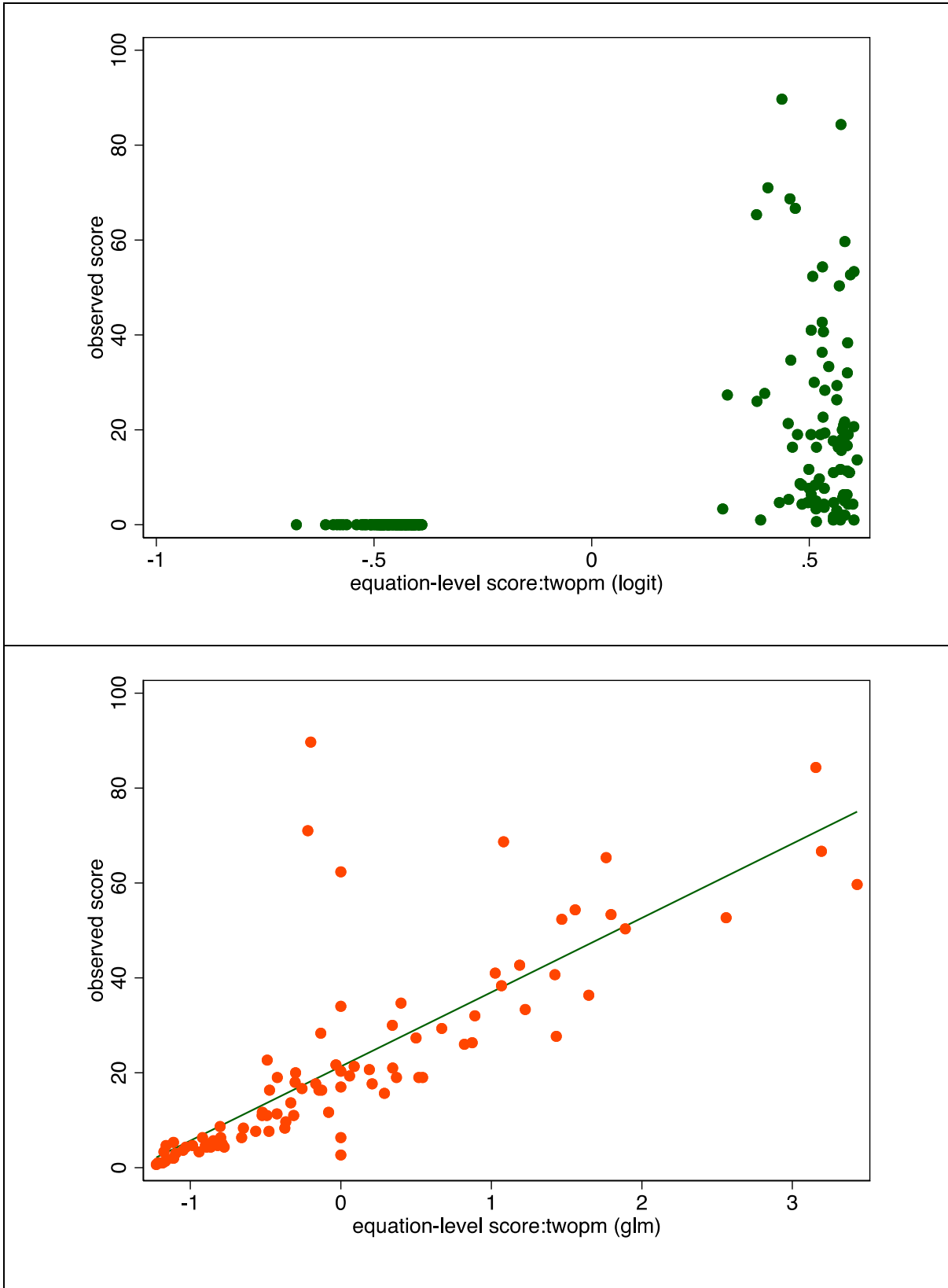


0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often, 4 = Very often.

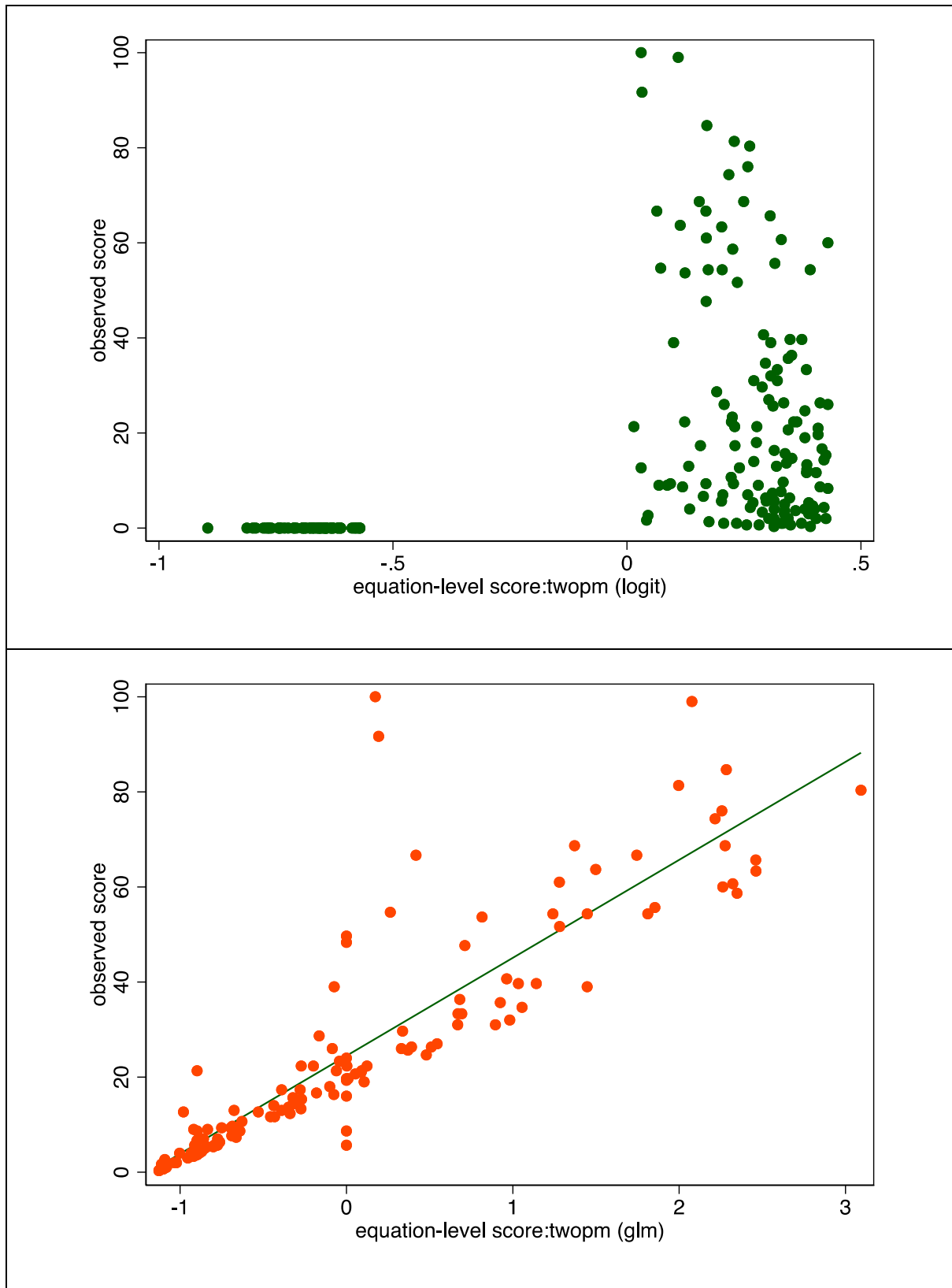
Supplemental Figure S25: relationships between the observed and predicted values for Experience of Unity (formal mindfulness practice model)



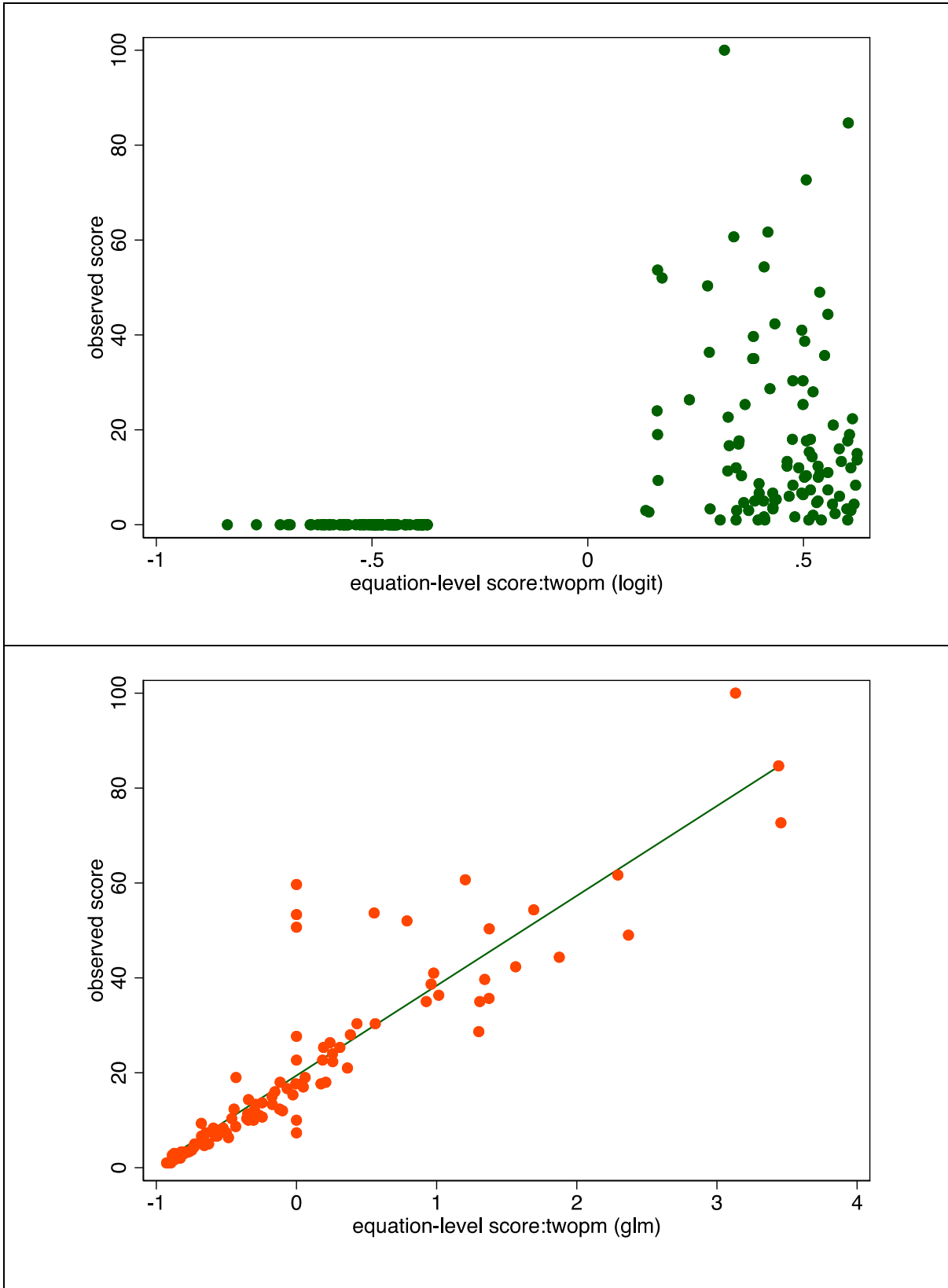
Supplemental Figure S26: relationships between the observed and predicted values for Spiritual Experience (formal mindfulness practice model)



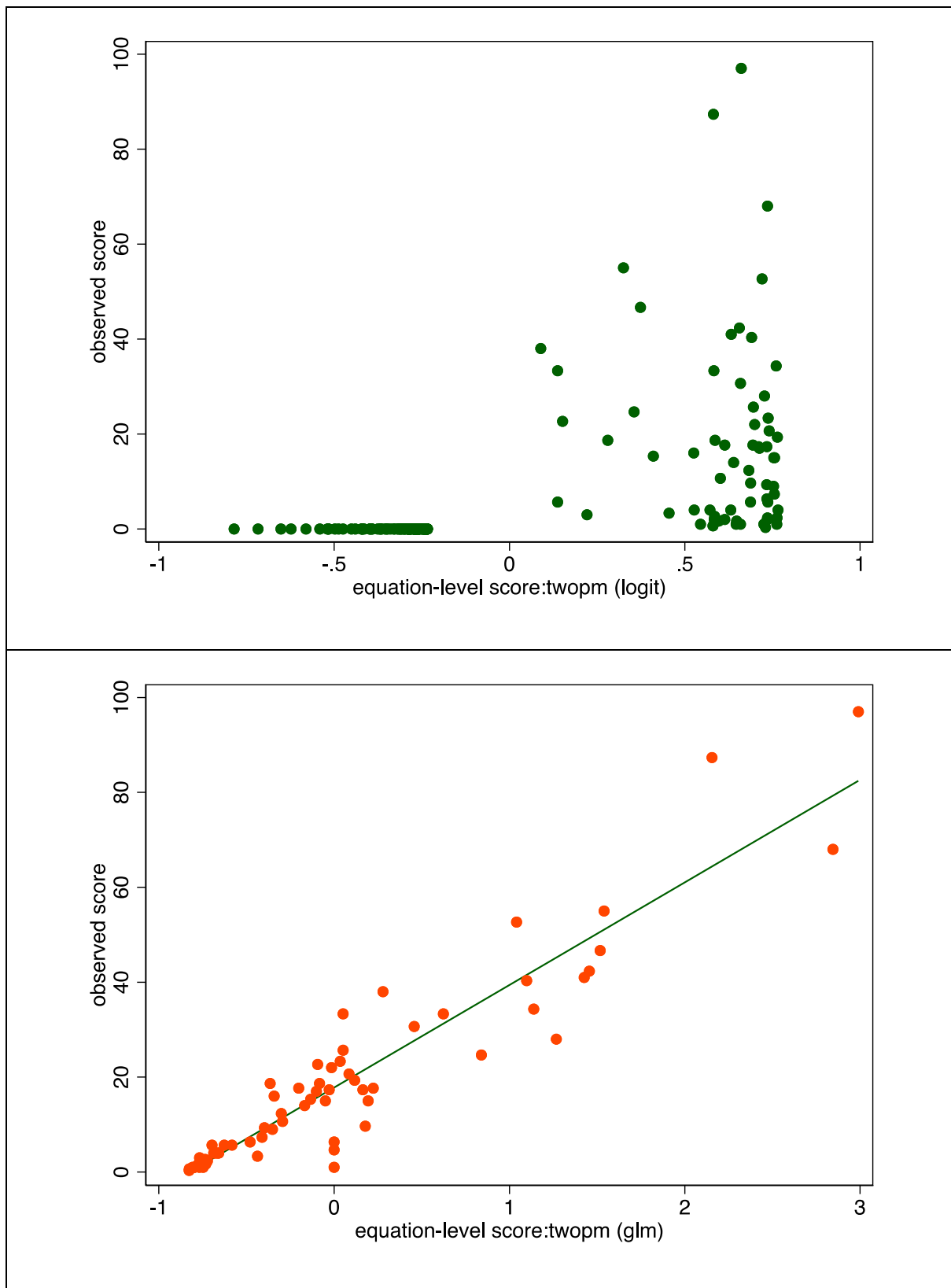
Supplemental Figure S27: relationships between the observed and predicted values for Blissful state (formal mindfulness practice model)



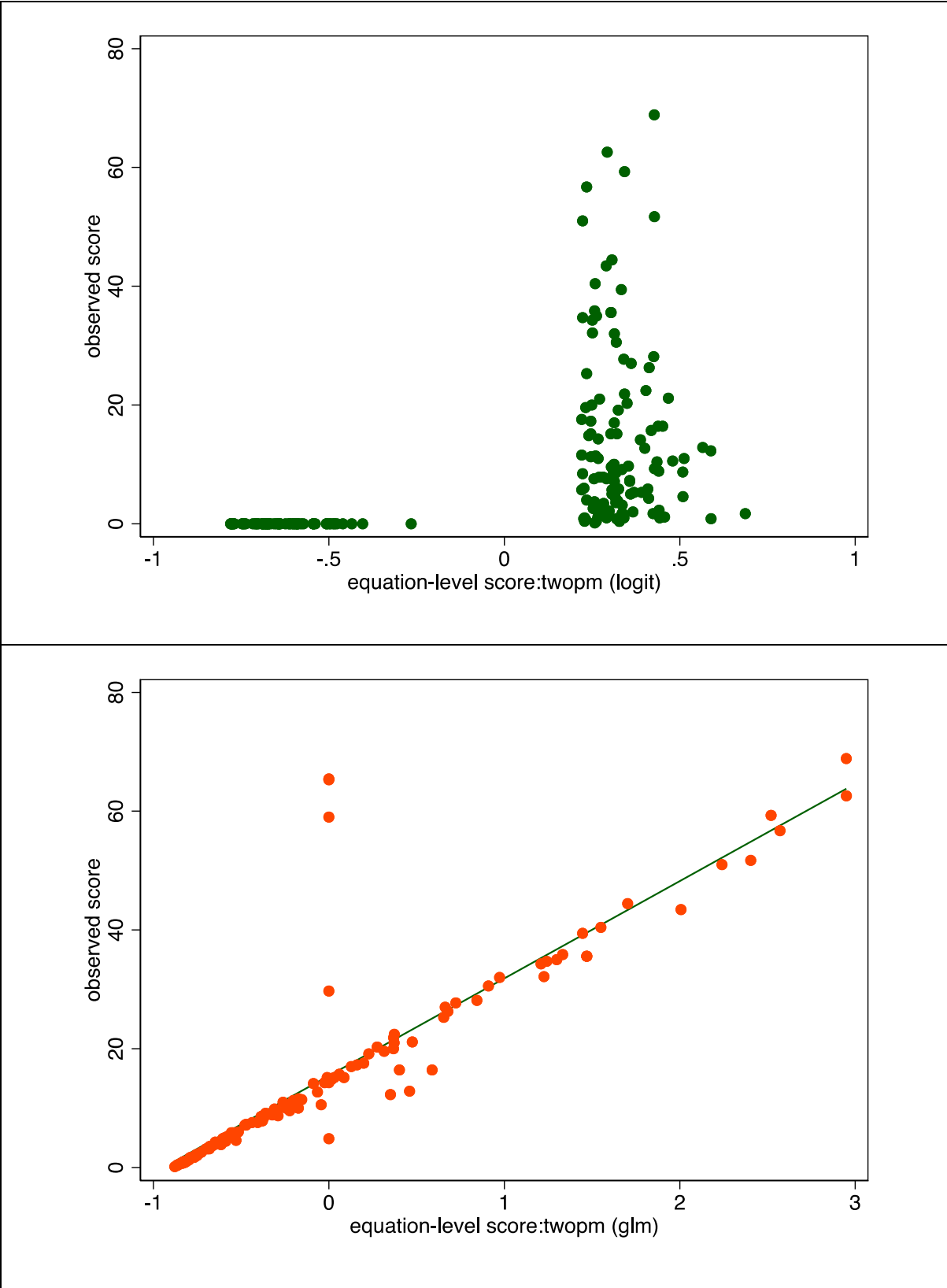
Supplemental Figure S28: relationships between the observed and predicted values for Insightfulness (formal mindfulness practice model)



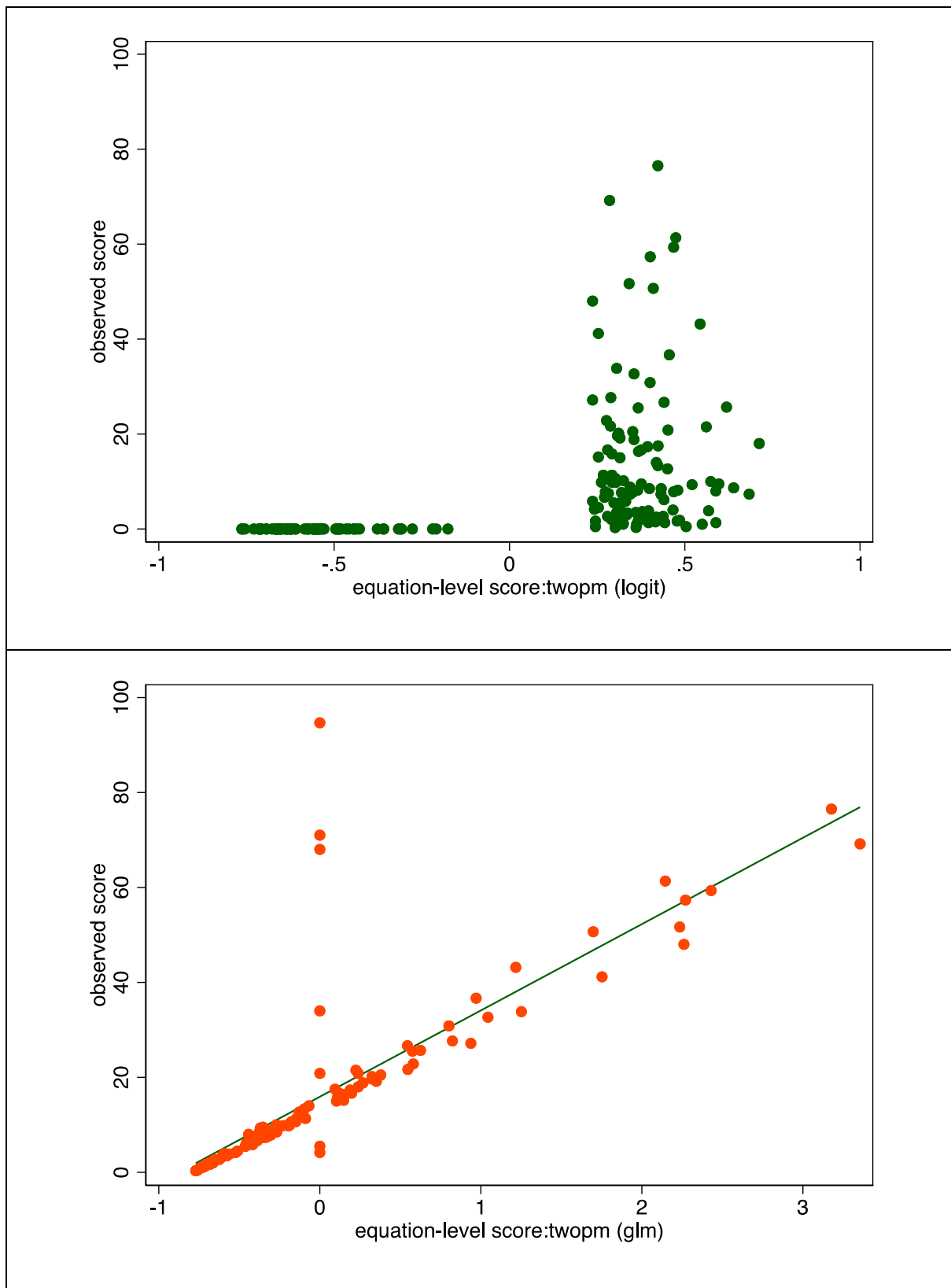
Supplemental Figure S29: relationships between the observed and predicted values for Disembodiment (formal mindfulness practice model)



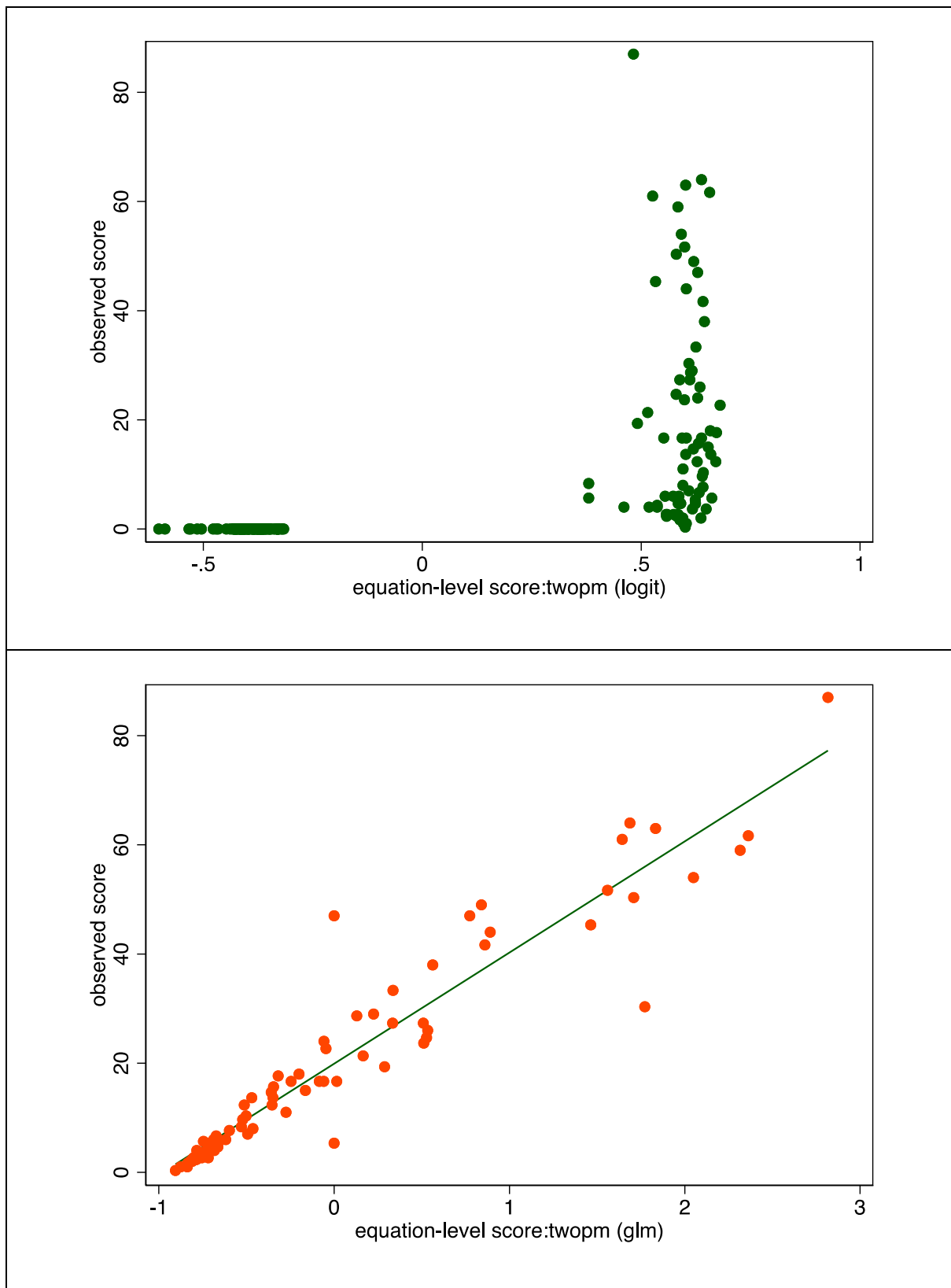
Supplemental Figure S30: relationships between the observed and predicted values for Impaired control & cognition (formal mindfulness practice model)



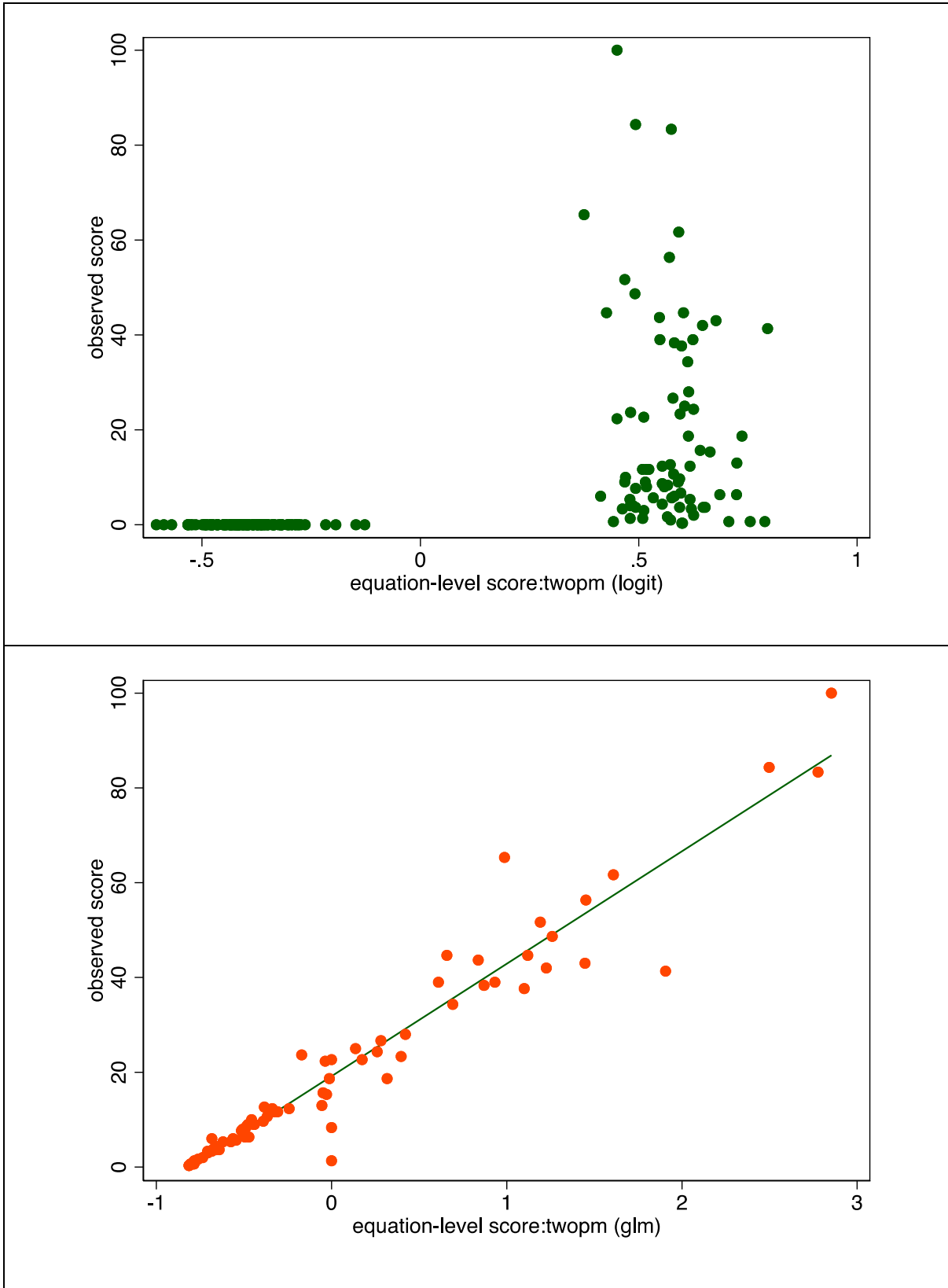
Supplemental Figure S31: relationships between the observed and predicted values for Anxiety (formal mindfulness practice model)



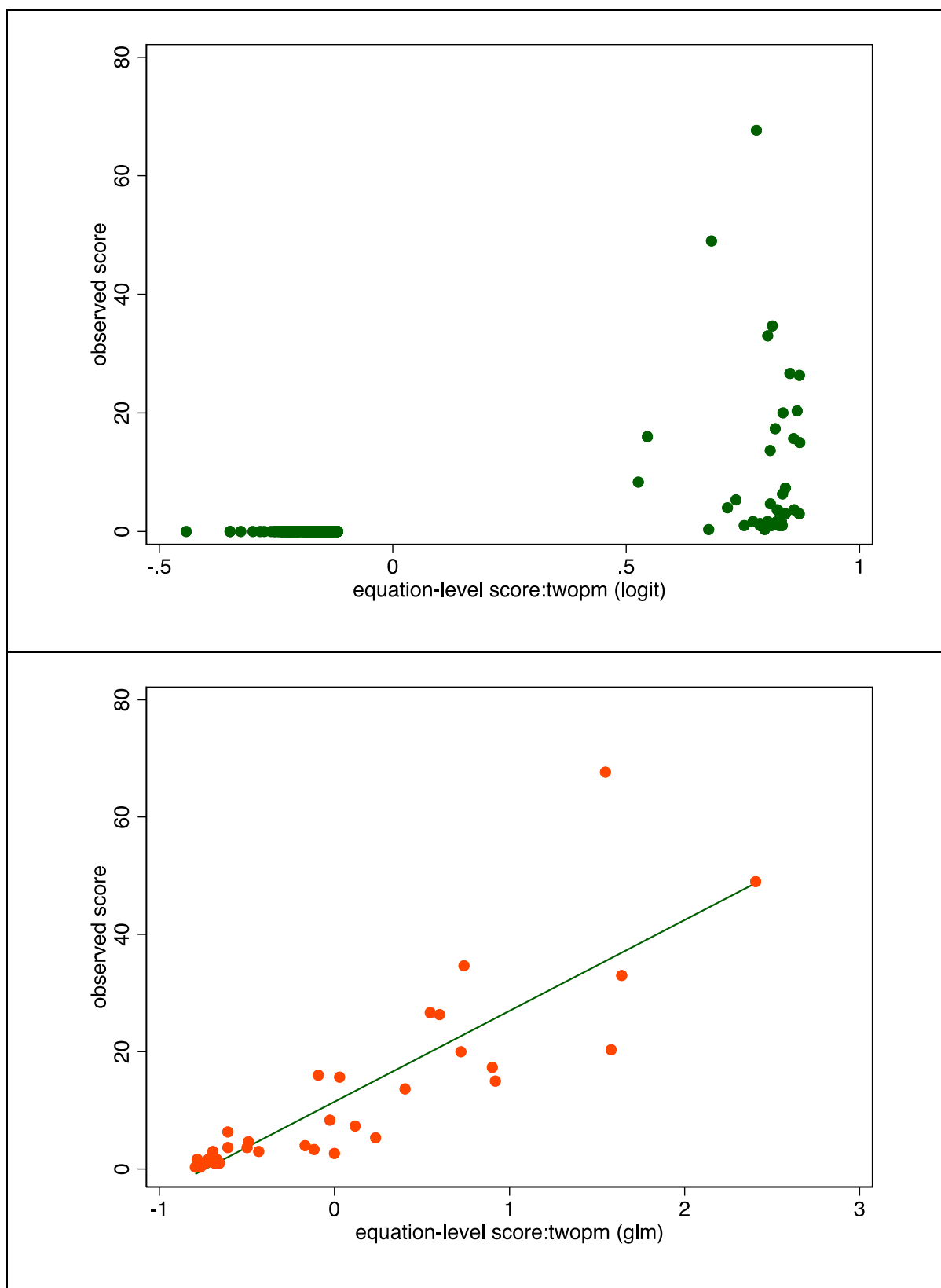
Supplemental Figure S32: relationships between the observed and predicted values for Complex imagery (formal mindfulness practice model)



Supplemental Figure S33: relationships between the observed and predicted values for Elementary imagery (formal mindfulness practice model)



Supplemental Figure S34: relationships between the observed and predicted values for Audiovisual synesthesiae (formal mindfulness practice model)



Supplemental Figure S35: relationships between the observed and predicted values for Changed meaning of percepts (formal mindfulness practice model)

