Supplementary Files

	Drug			Placebo		
Side Effect	Frequency	*N*	%	Frequency	*N*	%
Abdominal Pain	19	244	8	4	128	3
Abnormal Gate	1	15	7	0	16	0
Aggression	1	47	2	4	50	8
Aggressive reaction	1	39	3	4	38	11
Agitation	2	15	13	5	16	31
Akathisia	0	47	0	1	50	2
Anorexia	7	67	10	2	67	3
Anxiety	12	49	24	10	51	20
Apathy	5	40	13	0	39	0
Constipation	23	110	21	7	111	6
Coughing	22	232	9	9	118	8
Decreased Appetite	17	220	8	6	107	6
Diarrhea	14	111	13	16	117	14
Dizziness	8	49	16	2	51	4
Drooling	32	261	12	3	152	2
Drowsiness	24	49	49	6	51	12
Dry Mouth	10	64	16	5	67	7
Dyskinesia	7	76	9	3	51	6
Dyspepsia	9	70	13	4	79	5
Earache	2	49	4	4	51	8
Elevated serum prolactin	7	55	13	1	63	2
Enuresis	24	276	9	20	168	12
Epistaxis	5	165	3	0	51	0
Extrapyramidal Disorder	14	239	6	0	101	0
Fatigue	68	301	23	23	254	9
Fever	15	67	22	12	67	18
Gastroenteritis viral	5	165	3	0	51	0
Glazed Eyes	1	6	17	0	5	0
Headache	52	401	13	31	297	10
Hyperkinesia	2	74	3	1	50	2
Hypersomnia	5	165	3	0	51	0
Hypokinesia	2	74	3	0	50	0
Increased Thirst	11	220	5	7	107	7
Influenza-like symptoms	7	67	10	3	67	4
Injury	7	39	18	5	38	13
Insomnia	21	181	12	27	183	15
Inv, Muscle contraction	1	27	4	1	28	4
Lethargy	10	165	6	0	51	0
Muscle Rigidity	6	96	6	1	101	1
Muscle Spasms	0	47	0	1	50	2
Nasal Congestion	34	261	13	22	152	14
Nasopharyngitis	18	212	8	5	101	5
Nausea	12	214	6	6	102	6
Nervousness	0	6	0	1	5	20
Psychomotor hyperactivity	1	47	2	2	50	4
Pyrexia	19	212	9	1	101	1
Rash	4	165	2	1	51	2
Restlessness	3	49	6	3	51	6
Rhinitis	19	128	15	9	135	7
Rhinorrhea	8	165	5	1	51	2
Saliva Increased	19	232	8	3	118	3
Sedation	57	233	24	5	122	4
Siolorrhea	1	15	7	0	16	0
Skin Irritation	11	49	22	7	51	14
Sleep Problems	11	49	22	9	51	18
Somnolence	108	373	29	21		8
Sore Throat	5	49	10	1		2
Stomachache	5	49	10	9		18
Tachydardia	11	89	12	1		1
Tardive Dyskenisia	0	27	0	1		4
Tremor	34	328	10	1		1
Upper Respiratory Tract Inf.	37		11	18		8
Vomiting	65		17	34		12

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Table 1: Placebo Controlled Studies Side Effect Summary.

		Drug		Placebo	
Study	Side Effect Label	Frequency	N	Frequency	N
McDougle (1998) [49]	Sedation	9	15	0	16
Aman (2002) [50]	Somnolence	28	55	6	63
McCracken (2002) [51]	Drowsiness	24	49	6	51
	Fatigue	29		14	
Shea (2004) [52]	Fatigue	4	40	1	39
	Somnolence	29		3	
Gagiano (2005) [53]	Somnolence	9	39	6	38
Hollander (2006) [54]	Sedation	4	6	1	5
Pandina (2007) [55]	Somnolence	20	27	2	28
Owen (2009) [56]	Fatigue	10	47	2	50
	Sedation	5		1	
	Somnolence	8		2	
Marcus (2009) [57]	Fatigue	25	165	0	51
	Lethargy	10		0	
	Sedation	39		3	
Totals		253	483	43	341

Table 2: Combined Sedation, Somnolence, Drowsiness, and Lethargy Side Effects from Placebo Controlled Studies.

Side Effect	Frequency	N	%	Side Effect	Frequency	N	%
Abdominal Pain	6	49	12	Increased Thirst	8	35	23
Abnormal EKG	2	62	3	Inflicted injury	7	58	12
Abnormal Gate	1	20	5	Injury	15	58	26
Abnormal Hepatic fx	10	62	16	Insomnia	47	225	21
Abnormal lipid profile	10	62	16	Irritability	3	26	12
Aggression	2	9	22	Knee pain	1	25	4
Aggressive reaction	11	58	19	Lethargy	3	33	9
Agitation	28	194	14	Leukopenia	1	6	17
Akathisia	8	141	6	Lip Biting	1	25	4
Anxiety	27	100	27	Listlessness	1	17	6
Apathy	6	58	10	Mouth Opening	1	54	2
Asthenia	15	37	41	Muscle Rigidity	2	34	6
Behavioral Activation	1	6	17	Nasal Congestion	9	83	11
Blood in Stool	1	25	4	Nausea	25	181	14
Blunted Affect	1	18	6	Nausea/vomiting	12	50	24
Cataplexy	1	6	17	Neck Stiffness	1	25	4
Constipation	35	145	24	Nervousness	6	25	24
Coughing	51	74	69	Ocul. dystonia	6	54	11
Cutaneous Rash	1	20	5	Oral dyskinesia	1	12	8
Decreased Appetite	11	123	9	Pain in extremities	1	13	8
Decreased Urination	1	25	4	Pedal edema	1	8	13
Diarrhea	38	165	23	Pharyngitis	9	49	18
Dizziness	7	142	5	Polydipsia	11	49	22
Drooling	4	49	8	Polyuria	3	49	6
Drowsiness	14	18	78	Polyuria/polydipsia	6	33	18
Dry Mouth	27	101	27	Protruding tongue	1	23	4
Dyskinesia	7	49	14	Pseudoparkinsonism	4	33	12
Dyskinetic Mov.	2	54	4	Pyrexia	8	49	16
Dyspepsia	17	74	23	Rash	16	74	22
Dystonia	4	89	4	Rhinitis	23	109	21
Dysuria	2	25	8	Rhinorrhea	39	49	80
Ear Infection	2	49	4	Rigidity or Tremor	5	54	9
Ejacuation Dysfx	1	12	8	Saliva Increased	22	76	29
Elevated prolactin	44	57	77	Sedation	108	457	24
Emo. Lability/Agg	6	17	35	Sedation/GI complaints	13	40	33
Enuresis	38	256	15	Seizure	5	97	5
Epilepsy	1	7	14	Sinusitis	1	25	4
Epistaxis	7	49	14	Siolorrhea	13	100	13
Exacerbation of pain	1	20	5	Somnolence	48	107	45
EPS	2	62	3	Stomachache	3	26	12
Fatigue	51	133	38	Sweats	1	9	11
Fever	1	25	4	Tachydardia	9	126	7
Galactorrhoea	1	54	2	Tardive Dyskinesia	1	20	5
Gross Motor Incoord.	1	18	6	Tearfulness	1	25	4
Headache	42	233	18	Tics	1	9	11
Hematuria	1	25	4	Tinnitus	1	25	4
Hyperglicemia	1	62	2	Tiredness	15	25	60
Hyperphagia	11	23	48	Transient Lisping	1	12	8
Hyperprolactinemia	52	62	84	Tremor	14	189	7
Hypertension	1	6	17	Trouble Falling Asleep	2	25	8
Increased Activity	1	22	5	Trouble Waking Up	8	25	32
liver enzymes	1	53	2	Vomiting	32	127	25
motor activity	3	52	6	Weight Loss	6	12	50

Table 3: Non-placebo Controlled Studies Side Effect Summary.

Study	Side Effect Label	Frequency	N	%
McDougle (1997) [58]	Sedation	6	18	33
Martin (1999) [59]	Sedation	3	6	50
Friedlander (2001) [60]	Sedation	10	54	19
Malone (2001) [61]	Drowsiness	5	6	83
Masi (2001) [62]	Sedation	1	24	4
Kemner (2002) [63]	Sedation	6	25	24
	Asthenia	14		56
Malone (2002) [64]	Sedation	15	22	68
McDougle (2002) [65]	Sedation	5	12	42
Masi (2003) [66]	Sedation	3	53	6
Gagliano (2004) [67]	Sedation	6	20	30
Stravrakaki (2004) [68]	Sedation	4	7	57
Stigler (2004) [69]	Sedation	2	5	40
Findling (2004) [70]	Sedation	7	9	78
Corson (2004) [71]	Sedation	2	20	10
Harden (2005) [72]	Sedation	3	10	30
Rugino (2005) [73]	Listlessness	1	17	6
Gagiano (2005) [53]	Fatigue	9	58	16
	Somnolence	24		50
Malone (2007) [74]	Asthenia	1	12	8
	Drowsiness	9		75
Capone (2008) [75]	Sedation	1	23	4
Stigler (2009) [76]	Tiredness	15	25	60
	Trouble Waking Up	8		32
Amore (2011) [77]	Sedation	12	62	19
Aman (2009) [78]	Somnolence	24	49	49
	Fatigue	33		67
Hellings (2006) [79]	Sedation/GI Complaints	13	40	33
Zarcone (2001) [80]	Sedation	10	20	50
Troost (2005) [81]	Fatigue	9	26	35
Cohen (1994) [82]	Sedation	4	6	67
Janowsky (2003) [83]	Sedation	4	20	20
Lott (1996) [84]	Lethargy	3	33	9
	Sedation	1		3
Cohen (1998) [85]	Sedation	3	8	38
Total		276	690	40

Table 5: Positive Side Effects of CSS Reported Since 1989.

Study	Participant	Positive Behavioral Side Effects
Linscheid (1990) [95]	Marie	Reductions in other problem behaviors (bites, hair pulls, hits to chair).
	Johnny	Increases in behaviors suggestive of relaxation and decreased distressed vocalizations.
	Donna	General improvement in adaptive functioning.
	Michael	Began attending to physical environment, more responsive to positive reinforcement, followed simple instructions, improved self-help skills.
	Diane	Improved response to instruction, improved waiting skills, improved general social interaction.
Ricketts (1992) [96]		Higher rates of smiling and happy vocalizations and lower rates of distressed vocalizations when CSS was present. (the addition of naltrexone caused distressed vocalization to increase in the presence of CSS)
Williams (1993) [97]		Regained total independence in self-feeding and improvement in other self-care skills, remission of selective mutism.
Linscheid (1994) [98]		Increases in laughing, smiling, uttering a word associated with happiness, self-initiated toy play.
Mudford (1995) [91]		"Richard appeared to prefer wearing the TSD, approaching any person who carried the equipment into his ward, and assisting in attaching it to himself. He never attempted to remove the device. Removal of the device provoked tantrum behaviors. He was judged by staff to be happier, calmer, and less clingy to people when wearing the TSD." (p. 264)
Linscheid (2002) [99]		Increase in smiles, laughs, self-initiated communication, self-initiated socialization, decrease in pinching.
Salvy (2004) [100]		Less distressed when upset, more responsive to reinforcement, emission of more appropriate behaviors.
van Oorsouw (2008) [101]		Improvement or no change in the following behaviors: positive verbal and nonverbal utterances (smiling, dancing, singing, talking); negative verbal and nonverbal utterances (crying, whining, spitting, stamping feet etc); socially appropriate behavior (raising hand, greeting others, asking for help); off task behavior (head down on table refusing academic tasks).
Israel (2010) [102]		Anecdotal reports of more family contact, skill acquisition, improved mood/outlook, and requests to have CSS added to behavioral program.

Table 5: Positive Side Effects of CSS Reported Since 1989

Study	Drug	Behavior	Identifying Label From Original Study	Baseline Converted Frequency Per Day	Drug Converted Frequency Per Day	Percent Increase or Decrease	Multiply/ Divide By Factor
Millichamp (1987) [120]	Methotrimeprazine	Object stereotypy	Hugh	748.80	3070.08	310.00	x 4.1
	Methotrimeprazine	Body stereotypy		5374.08	3663.36	31.83	1.47
	Methotrimeprazine	Aggressive/destructive		5.76	270.72	4600.00	x 47
	Methotrimeprazine	Vocal sound		1054.08	1100.16	4.37	0.96
	Methotrimeprazine	Pica		5.76	5.76	0.00	1.00
	Methotrimeprazine	Self injury		0.00	5.76	476.00	x 5.76
	Methotrimeprazine	Object stereotypy	Richard	1296.00	950.40	26.67	1.36
	Methotrimeprazine	Body stereotypy		2672.64	1353.60	49.35	1.97
	Methotrimeprazine	Aggressive/destructive		11.52	11.52	0.00	1.00
	Methotrimeprazine	Vocal sound		1906.56	2217.60	16.31	0.86
	Methotrimeprazine	Pica		783.36	489.60	37.50	1.60
	Methotrimeprazine	Self injury		288.00	5.76	98.00	50.00
	Methotrimeprazine	Object stereotypy	Craig	362.88	5.76	98.41	63.00
	Methotrimeprazine	Body stereotypy		4527.36	5621.76	24.17	x 1.24
	Methotrimeprazine	Aggressive/destructive		0.00	0.00	0.00	0.00
	Methotrimeprazine	Vocal sound		783.36	86.40	88.97	9.07
	Methotrimeprazine	Pica		0.00	5.76	476.00	x 5.76
	Methotrimeprazine	Self injury		109.44	0.00	100.00	109.44
	Methotrimeprazine	Object stereotypy	Ian	3674.88	2275.20	38.09	1.62
	Methotrimeprazine	Body stereotypy		3669.12	2926.08	20.25	1.25
	Methotrimeprazine	Aggressive/destructive		0.00	0.00	0.00	0.00
	Methotrimeprazine	Vocal sound		276.48	161.28	41.67	1.71
	Methotrimeprazine	Pica		282.24	345.60	22.45	x 1.22
	Methotrimeprazine	Self injury		0.00	0.00	0.00	0.00
	Chlorpromazine	Object stereotypy	Dennis	3888.00	3317.76	14.67	1.17
	Chlorpromazine	Body stereotypy		5443.20	5656.32	3.92	x 1.04
	Chlorpromazine	Aggressive/destructive		0.00	0.00	0.00	0.00
	Chlorpromazine	Vocal sound		374.40	305.28	18.46	1.23
	Chlorpromazine	Pica		5.76	0.00	100.00	5.76
	Chlorpromazine	Self injury		17.28	17.28	0.00	1.00
	Chlorpromazine	Object stereotypy	Kevin	604.80	529. 92	12.38	1.14
	Chlorpromazine	Body stereotypy		4838.40	4970.88	2.74	x 1.03
	Chlorpromazine	Aggressive/destructive		0.00	0.00	0.00	0.00
	Chlorpromazine	Vocal sound		97.92	0.00	100.00	97.92
	Chlorpromazine	Pica		0.00	0.00	0.00	0.00
	Chlorpromazine	Self injury		5.76	0.00	100.00	5.76
Burgio (1985) [121]	Thioridazine	Aggression (play)	Doug	768.00	307.20	60.00	2.50
	Thioridazine	Disruption (play)		307.20	230.40	25.00	1.33
	Thioridazine	Self Stim (play)		3939.84	2995.20	23.98	1.32
	Thioridazine	Mouthing (play)		4147.20	3609.60	12.96	1.15
	Thioridazine	Aggression (academic)		76.80	23.04	70.00	3.33
	Thioridazine	Disruption (academic)		281.86	153.60	45.50	1.84
	Thioridazine	Self Stim (academic)		3018.24	1612.80	46.56	1.87
	Thioridazine	Mouthing (academic)		3532.80	2764.80	21.74	1.28
	Thioridazine	Aggression (play)	Terry	215.04	691.20	221.43	x 3.21
	Thioridazine	Disruption (play)		944.64	3609.60	282.11	x 3.82
	Thioridazine	Self Stim (play)		5015.04	6528.00	30.17	x 1.3
	Thioridazine	Aggression (academic)		7.68	2.30	70.00	3.33
	Thioridazine	Disruption (academic)		230.40	691.20	200.00	x 3
	Thioridazine	Self Stim (academic)		3632.64	3609.60	0.63	1.01
Luiselli (1986) [122]	Haloperidol	Face striking	Anne	1248	1824	46.15	x 1.46
	Thioridazine	Self injury	Frank	248	377	52.02	x 1.52
Singh (1993) [109]	Thioridazine	Stereotypy	Subject 1	4856.68	2776.32	42.84	1.75
	Thioridazine	Stereotypy	Subject 2	5034.24	3548.16	29.52	1.42
	Thioridazine	Stereotypy	Subject 3	3646.08	1866.24	48.82	1.95

Table 6: Converted Frequency Data From First Generation Single Subject Design Studies.

	FGAs		SGAs		CSS	
Percent Reduction	Number of Behaviors	Percent of Sample	Number of Behaviors	Percent of Sample	Number of Behaviors	Percent of Sample
90	6[a]	10.9	34[b]	25.0	110[c]	94
80	1	1.8	14	10.3	2	1.7
70	2	3.6	16	11.8	0	0
60	1	1.8	12	8.8	0	0
50	1	1.8	14	10.3	0	0
40						
	7	12.7	9	6.6	0	0
30	4	7.3	7	5.2	0	0
20	6	10.9	4	2.9	0	0
10	4	7.3	4	2.9	0	0
.01	1	1.8	2	1.5	0	0
No change or increase	22	40	20	14.7	5	4.3

Table 7: Behaviors Treated with First Generation Antipsychotic Medication Classified According to Percent Reduction.

[a]4 behavior were reduced by 100%
[b]23 behaviors or groups of behaviors were reduced by 100%
[c]83 behaviors or groups of behaviors were reduced by 100%

Study	Drug	Behavior	N	Baseline Converted Mean Frequency Per Day	Drug Converted Mean Frequency Per Day	Percent Increase or Decrease	Multiply/ Divide By Factor
Heistad (1982) [123]	Thioridazine	Self stimulatory Behavior	100	5193.60	4387.20	15.53	1.18
		Active Negative - Pacing, injury to self, misappropriate, objectionable behavior, humiliate, tease, command negative, physical negative, yell, disapproval, and destructiveness.		988.80	816.00	17.48	1.21
		Passive negative - Inactivity, error, vanish from assigned place, whine, cry, dependency, noncompliance, ignore.		1065.60	1046.40	1.80	1.02
Aman (1988) [117]	Thioridazine	Self stimulatory beh. including self-injury	10	1884.00	1416.00	24.84	1.33
	Thioridazine	Any rule violation		199.00	80.00	59.80	2.49
Aman (1989) [118]	Haloperidol	Self stimulatory beh. including self-injury	20	1381.00	1450.00	5.00	x 1.05
	Haloperidol	Any rule violation		285.00	231.00	18.95	1.23
May (1995) [110]	Thioridazine	Destructive Behaviors	23	746.00	882.00	18.23	x 1.18
Mace (2001)a [111]	Haloperidol	Self-injury	8		2000		1580.80

Table 8 : Converted Frequency Data From First Generation Group Design Studies

[a] In this study, the effect of the presence and absence of haloperidol was compared with the presence and absence of placebo. The baseline converted mean per day was 2342.4 the placebo converted mean per day was 2969.6; and the percent increase was equal to 21.

					ABC-I					
					Drug		Placebo		CGI-I	
Study	Drug	N	Participants	Age	Baseline	Endpoint	Baseline	Endpoint	Drug	Placebo
Perry (1997) [124]	Risperidone	6	PDD	7-14	-	-	-	-	4/6	-
McDougle (1997) [58]	Risperidone	18	PDD	5-18	-	-	-	-	12/18	-
McDougle (1998) [49]	Risperidone	31	Autism PDD	18-43	-	-	-	-	8/14	0/16
Nicolson (1998) [125]	Risperidone	10	Autism	4 -10	-	-	-	-	8/10	-
Martin (1999) [59]	Quetiapine	6	Autism	6-15	15.67	22.3	-	-	2/6	-
Friedlander (2001) [60]	Risperidone	40	DD	13-24	-	-	-	-	23/40	-
Malone (2001) [61]	Olanzapine	6	Autism	4-12	-	-	-	-	5/6	-
Masi (2001) [62]	Risperidone	24	Autism	3-6	-	-	-	-	8/22	-
Zarcone (2001) [80]	Risperidone	20	Autism; DD	6-65	17.9	10.6	-	-	-	-
Aman (2002) [50]	Risperidone	118	IQ 36-84	5-12	23.5	13.5	23.6	19.2	28/52	5/63
McCracken (2002) [51]	Risperidone	101	Autism	5-17	26.2	11.3	25.5	21.9	38/49	6/52
Kemner (2002) [63]	Olanzapine	23	Autism	6-16	11.1	8.1	-	-	3/23	-
Malone (2002) [64]	Risperidone	22	Autism	2-16	-	-	-	-	17/22	-
McDougle (2002) [65]	Ziprasidone	10	Autism; PDD	8-20	-	-	-	-	6/12	-
Masi (2003) [66]	Risperidone	47	Autism; PDD	3-6	-	-	-	-	22/47	-
Shea (2004) [52]	Risperidone	79	Autism	5-12	18.9	6.8	21.2	14.7	21/40	7/38
Gagliano (2004) [67]	Risperidone	20	Autism	3-10	-	-	-	-	8/20	-
Stravrakaki (2004) [68]	Olanzapine	7	Autism; PDD	8-52	-	-	-	-	6/7	-
Stigler (2004) [69]	Aripiprizole	5	PDD-NOS	5-18	-	-	-	-	5/5	-
Findling (2004) [70]	Quetiapine	9	Autism	10-17	19	9	-	-	2/9	-
Corson (2004) [71]	Quetiapine	20	Autism; PDD	5-28	-	-	-	-	8/20	-
Harden (2005) [72]	Quetiapine	10	Autism PDD	5-19	-	-	-	-	6/10	-
Rugino (2005) [73]	Risperidone	7	Autism; PDD	5-17	-	-	-	-	2/7	-
Gagiano (2005) [53]	Risperidone		Adults with MR	18-65	18.4	8	17.9	12.1	-	-
					31.2	22.2	-	-	-	-
Troost (2005) [81]	Risperidone	36	Autism	5-17	23.1	12	-	-	-	-
Hellings (2006) [79]	Risperidone	40	DD	5-56	19.15	11.15	-	-	-	-
Hollander (2006) [54]	Olanzapine	11	Autism PDD	6-14	-	-	-	-	3/6	1/5
Malone (2007) [74]	Ziprasidone	12	Autism	12-18	1.5	1.1	-	-	9/12	-
Pandina (2007) [55]	Risperidone	55	Autism	5-12	20.6	7.2	21.6	14.1	14/27	6/28
Fido (2008) [126]	Olanzapine	40	Autism	7-17	20	6.2	-	-	12/40	-
Tyrer (2008) [115]	Risperidone	86	Adults with MR	28-55	-	-	-	-	7/29	5/29
Capone (2008) [75]	Risperidone	23	Autism; DD	3-13	15.8	10.7	-	-	-	-
Aman (2009) [78]	Risperidonea	47	Autism; PDD	4-13	29.69	14.53	-	-	-	-
Stigler (2009) [76]	Aripiprizole	25	PDD-NOS	5-17	29.6	8.1	-	-	22/25	-
Marcus (2009) [57]	Aripiprizole	213	Autism	6-17	28.6	16.2	28	19.6	87/164	17/49
					28.2	15	-	-	-	-
					28.9	14.5	-	-	-	-
Owen (2009) [56]	Aripiprizole	98	Autism	6-17	29.6	16.7	30.8	26.8	24/46	7/49
Amore (2011) [77]	Risperidone	31	MR	-	-	-	-	-	29/31	-
	Olanzapine	31	MR	-	-	-	-	-	21/31	-
Marcus (2011) [127]	Aripiprizole	48b	Autism	6-17	23.1	16.7	-	-	-	-

Table 6: Converted Frequency Data From First Generation Single Subject Design Studies.

Study	Drug	Behavior	Identifying Label From Original Study	Baseline Converted Frequency Per Day	Drug Converted Frequency Per Day	Percent Increase or Decrease	Multiply/ Divide By Factor
Cohen (1994) [82]	Clozapine and Valproic Acid	Episodes of Agitation	Case 1	15.50	4.10	74	3.8
	Clozapine	Aggression	Case 2	0.60	0.17	72	3.6
	Clozapine	Self -injury	Case 2	1.37	0.47	66	2.9
	Clozapine	Verbal Aggression	Case 3	1.23	0.57	54	2.2
	Clozapine	Physical Aggression	Case 3	0.53	0.50	6	1.1
	Clozapine and Valproic Acid	Self -injury	Case 4	1.73	0.77	56	2.3
	Clozapine and Valproic Acid	Tantrums	Case 4	2.27	1.03	54	2.2
	Clozapine	Aggression	Case 5	0.40	0.00	100	12.0
	Clozapine and Valproic Acid	Aggression	Case 6	0.77	0.00	100	23.0
Lott (1996) [84]	Risperidone	Aggression	1	0.08	0.28	240	x 3.5
	Risperidone	Self-injury	2	0.07	0.35	425	x 5.0
	Risperidone	Aggression	3	3.38	2.60	23	1.3
	Risperidone	Aggression	4	2.14	0.48	77	4.4
	Risperidone	Self-injury	4	10.20	3.76	63	2.7
	Risperidone	Self-injury	5	0.05	0.08	67	x 1.6
	Risperidone	Self-injury	6	0.01	0.10	850	x 10.0
	Risperidone	Aggression	7	2.24	0.31	86	7.1
	Risperidone	Self-injury	7	0.25	0.19	22	1.3
	Risperidone	Self-injury	8	0.02	0.00	100	0.02
	Risperidone	Aggression	9	25.12	11.74	53	2.1
	Risperidone	Self-injury	9	0.25	0.07	73	3.8
	Risperidone	Destruction	9	0.43	0.19	57	2.3
	Risperidone	Self-injury	10	4.89	1.16	76	4.2
	Risperidone	Aggression	11	0.12	0.02	81	5.3
	Risperidone	Aggression	12	0.03	0.01	60	2.5
	Risperidone	Self-injury	12	1.05	0.15	86	7.1
	Risperidone	Destruction	12	0.03	0.08	200	x 2.7
	Risperidone	Aggression	13	0.55	0.04	93	14.3
	Risperidone	Self-injury	13	1.38	0.02	98	62.8
	Risperidone	Self-injury	14	0.24	0.43	84	0.5
	Risperidone	Aggression	15	1.40	0.38	73	3.7
	Risperidone	Self-injury	16	0.35	0.28	19	1.2
	Risperidone	Aggression	17	0.55	1.38	151	x 2.5
	Risperidone	Self-injury	18	1.19	0.84	30	1.4
	Risperidone	Aggression	19	2.12	0.76	64	2.8
	Risperidone	Self-injury	19	3.76	2.41	36	1.7
	Risperidone	Aggression	20	0.08	0.02	71	3.5
	Risperidone	Aggression	21	0.08	0.80	873	x 10.0
	Risperidone	Self-injury	21	0.23	3.47	1405	x 15.1
	Risperidone	Destruction	21	0.02	0.00	100	0.02
	Risperidone	Self-injury	22	3.63	1.15	68	3.1
	Risperidone	Destruction	22	0.30	0.03	89	9.2
	Risperidone	Aggression	23	2.95	1.87	36	1.6
	Risperidone	Self-injury	23	0.59	0.31	47	1.9

Continue...

Study	Drug	Behavior	Identifying Label From Original Study	Baseline Converted Frequency Per Day	Drug Converted Frequency Per Day	Percent Increase or Decrease	Multiply/ Divide By Factor
	Risperidone	Aggression	24	0.03	0.00	100	0.03
	Risperidone	Self-injury	24	0.87	0.10	88	8.4
	Risperidone	Destruction	24	0.29	0.13	57	2.3
	Risperidone	Self-injury	25	0.80	0.13	84	6.0
	Risperidone	Aggression	26	0.31	0.20	36	1.6
	Risperidone	Self-injury	26	0.27	0.31	14	1.2
	Risperidone	Aggression	27	0.10	0.00	100	0.1
	Risperidone	Aggression	28	3.31	0.32	90	10.2
	Risperidone	Self-injury	28	0.91	0.17	81	5.4
	Risperidone	Aggression	29	1.22	0.04	96	27.8
	Risperidone	Aggression	30	0.09	0.03	69	3.2
	Risperidone	Self-injury	30	0.37	0.16	57	2.3
	Risperidone	Aggression	31	0.41	0.24	42	1.7
	Risperidone	Self-injury	31	0.75	0.56	26	1.3
	Risperidone	Aggression	32	0.57	0.37	35	1.5
	Risperidone	Self-injury	32	0.29	0.30	4	x 1.0
	Risperidone	Destruction	32	0.34	0.51	51	x 1.5
Cohen (1998) [85]	Risperidone	Assault	1	0.01	0.00	100	0.01
	Risperidone	Self-injury	1	0.66	0.13	80	4.9
	Risperidone	Assault	2	2.57	0.13	95	19.3
	Risperidone	Disruption	2	2.53	0.03	99	76.0
	Risperidone	Assault	3	0.19	0.10	47	1.9
	Risperidone	Self-injury	3	0.36	0.30	16	1.2
	Risperidone	Assault	4	2.37	0.37	85	6.5
	Risperidone	Self-injury	4	16.64	3.87	77	4.3
	Risperidone	Assault	5	2.30	3.30	44	x 0.7
	Risperidone	Self-injury	6	2.09	0.00	100	2.1
	Risperidone	Assault	7	40.04	7.40	82	5.4
	Risperidone	Property Destruction	7	0.47	0.27	43	1.8
	Risperidone	Assault	8	0.06	0.00	100	0.06
	Risperidone	Self-injury	8	2.27	0.70	69	3.2
Cohen (1998) [85]	Risperidone	Assault	1	0.01	0.00	100	0.01
	Risperidone	Self-injury	1	0.66	0.13	80	4.9
	Risperidone	Assault	2	2.57	0.13	95	19.3
	Risperidone	Disruption	2	2.53	0.03	99	76.0
Dartnall (1999) [128]	Risperidone	Self-injury	1	1.22	0.00	100	1.2
	Risperidone	Aggression toward en.	1	0.23	0.00	100	0.2
	Risperidone	Noncompliance	2	1.40	0.00	100	1.4
	Risperidone	Hiding	2	0.47	0.01	98	42.7
	Risperidone	Assault	3	0.19	0.10	47	1.9
Crosland (2003) [129]	Risperidone	Demand Destructive	Reggie	672.00	201.60	70	3.3
	Risperidone	Tangible Destructive	Reggie	1920.00	979.20	49	2.0
	Risperidone	Attention Destructive	Sean	14592.00	5664.00	61	2.6
	Risperidone	Tangible Destructive	Sean	2208.00	768.00	65	2.9
	Risperidone	Demand Destructive	Sean	1824.00	768.00	58	2.4

Continue...

Study	Drug	Behavior	Identifying Label From Original Study	Baseline Converted Frequency Per Day	Drug Converted Frequency Per Day	Percent Increase or Decrease	Multiply/ Divide By Factor
Janowsky (2003) [83]	Antipsychotic Plus Olanzapine	Aggression	A	0.04	0.02	63	2.7
	Antipsychotic Plus Olanzapine	Aggression	B	0.07	0.07	8	1.1
	Antipsychotic Plus Olanzapine	Aggression	E	0.71	0.33	54	2.2
	Olanzapine	Aggression	F	0.09	0.09	0	1.0
	Antipsychotic Plus Olanzapine	Aggression	I	0.10	0.01	95	19.0
	Antipsychotic Plus Olanzapine	Aggression	J	0.03	0.02	50	2.0
	Antipsychotic Plus Olanzapine	Aggression	K	0.04	0.01	88	8.0
	Antipsychotic Plus Olanzapine	Aggression	M	0.04	0.00	100	1.3
	Antipsychotic Plus Olanzapine	Aggression	O	0.44	0.10	78	4.4
	Antipsychotic Plus Olanzapine	Aggression	P	0.08	0.04	53	2.1
	Antipsychotic Plus Olanzapine	Aggression	Q	0.71	0.38	46	1.9
	Antipsychotic Plus Olanzapine	Aggression	R	0.03	0.02	40	1.7
	Antipsychotic Plus Olanzapine	Aggression	S	0.13	0.00	100	4.0
	Antipsychotic Plus Olanzapine	Aggression	T	0.09	0.03	71	3.4
	Antipsychotic Plus Olanzapine	Self -injury	F	0.08	0.08	0	1.0
	Antipsychotic Plus Olanzapine	Self -injury	G	0.02	0.01	33	1.5
	Antipsychotic Plus Olanzapine	Self -injury	K	0.15	0.02	85	6.8
	Antipsychotic Plus Olanzapine	Self -injury	L	0.33	0.27	17	1.2
	Antipsychotic Plus Olanzapine	Self -injury	P	0.03	0.02	33	1.5
	Antipsychotic Plus Olanzapine	Self -injury	R	0.08	0.05	40	1.7
	Antipsychotic Plus Olanzapine	Self -injury	S	0.08	0.00	100	2.3
	Antipsychotic Plus Olanzapine	Disruptive	A	0.01	0.02	100	x 2.0
	Antipsychotic Plus Olanzapine	Disruptive	C	0.26	0.05	81	5.2
	Olanzapine	Disruptive	D	0.52	0.07	87	7.3
	Antipsychotic Plus Olanzapine	Disruptive	E	0.55	0.05	91	11.1
	Antipsychotic Plus Olanzapine	Disruptive	H	0.01	0.02	100	x 2.0
	Antipsychotic Plus Olanzapine	Disruptive	J	0.20	0.23	14	x 1.2
	Antipsychotic Plus Olanzapine	Disruptive	N	0.08	0.05	33	1.5
	Antipsychotic Plus Olanzapine	Disruptive	O	0.11	0.05	50	2.0
	Antipsychotic Plus Olanzapine	Disruptive	P	0.28	0.12	59	2.4
	Antipsychotic Plus Olanzapine	Disruptive	S	0.36	0.03	91	10.8
	Antipsychotic Plus Olanzapine	Disruptive	T	0.11	0.07	40	1.7
Zarcone (2004) [130]	Risperidone	Destructive	Jack	940.8	0	100	940.8
	Risperidone	Destructive	Skip	1094.4	0.00	100	1094.4
	Risperidone	Destructive	Martin	192	19.2	90	10.0
	Risperidone	Destructive	Rose	336	0	100	336.0
	Risperidone	Destructive	Alice	120	0.00	100	120.0
	Risperidone	Destructive	Sam	4185.6	1267.2	70	3.3
	Risperidone	Destructive	Reggie	1032	264	74	3.9
	Risperidone	Destructive	Dolores	192	0.00	100	192.0
	Risperidone	Destructive	Carol	633.6	115.2	82	5.5
	Risperidone	Destructive	Mary	652.8	0.00	100	652.8
	Risperidone	Destructive	Simon	1324.8	1113.6	16	1.2
	Risperidone	Destructive	Aaron	3744	1440	62	2.6
	Risperidone	Destructive	Caleb	288	144	50	2.0

Table 10: Converted Frequency Data From Second Generation Single Subject Design Studies.

Study	Drug	Behavior	N	Baseline Converted Mean Frequency Per Day	Drug Converted Mean Frequency Per Day	Percent Increase or Decrease	Multiply/ Divide By Factor
Ruedrich (2008) [131]	Atypical	Aggression and Self-injury	12	2.90	2.20	24	1.32
	Atypical	Aggression	14	0.94	0.64	32	1.47
	Atypical	Self -injury	5	0.70	0.78	11	x 1.11
Amore (2011) [77]	Olanzapine	Verbal Aggression	31	1.54	0.34	78	4.53
	Olanzapine	Object aggression		0.79	0.24	70	3.30
	Olanzapine	Self aggression		1.35	0.32	76	4.21
	Olanzapine	Aggression toward others		0.53	0.22	59	2.41
	Risperidone	Verbal Aggression	31	1.18	0.33	72	3.60
	Risperidone	Object aggression		0.77	0.21	73	3.69
	Risperidone	Self aggression		1.15	0.34	71	3.39
	Risperidone	Aggression toward others		0.38	0.13	65	2.86

Table 11: Converted Frequency Data From Second Generation Group Design Studies

Study	Behavior	Identifying Label From Original Study	Baseline Converted Frequency Per Day	Treatment Frequency Per Day	Percent Increase or Decrease	Multiply/ Divide By Factor
Tate (1966) [132]	Hit self, self injury		6336.00	0.00	100	6336.00
Baroff (1968) [133]	Head hitting		1920.00	0.04	100	46080.74
Risley (1968) [134]	Dangerous climbing		107.20	0.00	100	107.20
Whaley (1968) [135]	Hand to head		76128.00	0.00	100	76128.00
Kushner (1969) [136]	Hand biting	Case 4	4.29	0.00	100	4.29
Lovaas (1969) [137]	Self destructive responses	John	42128.00	0.00	100	42128.00
	Self destructive responses	Linda	29779.00	0.00	100	29779.00
	Self destructive responses	Greg	4818.00	0.00	100	4818.00
Ludwig (1969) [138]	Aggression (hits, kicks, bites, spits)		259.00	0.00	100	259.00
Kohlenberg (1970) [139]	Stomach tensions leading to vomiting		2028.00	0.00	100	2028.00
Bucher (1971) [140]	Touching electrical appliances		1354.00	26.00	98	52.08
Corte (1971) [141]	Hand to face	Subject 1	1600.00	0.00	100	1600.00
	Face slapping, eye/tongue poking, hitting face on floor	Subject 2	8240.00	0.00	100	8240.00
	Pull out strands of hair, skin picking	Subject 3	4032.00	0.00	100	4032.00
	Hand biting, eating inedible objects	Subject 4	1895.00	0.00	100	1895.00
Baumeister (1972) [142]	Rocking	Subject 1	34464	0	100	34464.00
	Rocking	Subject 2	33888	1120	97	30.26
	Rocking	Subject 3	21792	96	100	21792.00
Tate (1972) [143]	Self injury, head banging, kicking, hitting self, biting self, cut self with fingernail		12859.00	3.39	100	3793.22
Brandsma (1973) [144]	Aggression		1795.00	0.00	100	1795.00
Hall (1973) [145]	Self-mutilation		25.00	0.00	100	25.00
Merbaum (1973) [146]	Face hitting		21216.00	0.00	100	21216.00
Wright (1973) [173]	Waving hand to induce seizures		848.00	0.00	100	848.00
Prochaska (1974) [148]	Head banging		3360.00	0.00	100	3360.00
Ramey (1974) [149]	Head hitting		3008.00	0.00	100	3008.00
Young (1974) [150]	Head to rail		2304.00	130.56	94	17.65
Ball (1975) [151]	Pinching, biting, hitting self	Case 1	29520.00	0.91	100	32439.56
	Throat hitting	Case 3	255.00	0.00	100	255.00
	Aggression	Case 4	3.90	0.05	99	79.30
	Aggression, food throwing, aggression toward objects	Case 5	5.13	0.79	85	6.46
Romanczyk (1975) [152]	Self hitting		86400.00	1099.00	99	78.62
Duker (1976) [153]	Head banging		640.00	0.00	100	640.00
	Hitting head with fists		713.00	8.00	99	89.13
Anderson (1978) [154]	Finger to mouth	CS	2880.00	5664.00	97	x 1.97
	Finger to mouth	PB	960.00	4800.00	400	x 5
	Finger to mouth	CW	4800.00	5760.00	20	x 1.2
	Finger to mouth	RK	2880.00	11520.00	300	x 4
	Head banging including attempts	JA	5760.00	11520.00	100	x 2

Continue...

Study	Behavior	Identifying Label From Original Study	Baseline Converted Frequency Per Day	Treatment Frequency Per Day	Percent Increase or Decrease	Multiply/ Divide By Factor
Foxx (1989) [155]	Hair pulling		1.20	0.02	98	60.00
	Aggression		4.53	0.02	100	226.50
Linscheid (1990) [95]	Head hits	Marie	10752.00	19.20	100	560.00
	Head hits	Johnny	6176.00	2.67	100	2313.11
	Head hits	Donna	48192.00	76.80	100	627.50
	Head hits	Michael	45600.00	10.72	100	4253.73
	Head hits	Diane	15936.00	96.00	99	166.00
Williams (1993) [97]	Biting and self injury		7680.00	0.00	100	7680.00
Linscheid (1994) [98]	Head hits		3390.00	33.00	99	102.73
Mudford (1995) [91]	Hits		9043.20	1.78	100	5086.80
Linscheid (2002) [99]	Head hits		20736.00	128.00	99	162.00
Salvy (2004) [100]	Head banging, hitting self		117.00	0.00	100	117.00
Israel (2008) [3]	Aggression	Student 1	6.88	0.00	100	6.88
	Aggression	Student 2	2.43	0.00	100	2.43
	Aggression	Student 3	9.80	0.00	100	9.80
	Aggression	Student 4	0.73	0.00	100	0.73
	Aggression	Student 5	2.51	0.00	100	2.51
	Aggression	Student 6	31.82	1.19	96	26.72
	Aggression	Student 7	1.77	0.00	100	1.77
	Aggression	Student 8	12.97	0.00	100	12.97
	Aggression	Student 9	3.83	0.00	100	3.83
	Aggression	Student 10	4.91	0.00	100	4.91
	Aggression	Student 11	2.76	0.00	100	2.76
	Aggression	Student 12	23.94	0.00	100	23.94
	Aggression	Student 13	7.63	0.00	100	7.63
	Aggression	Student 14	2.83	0.00	100	2.83
	Aggression	Student 15	31.56	0.00	100	31.56
	Aggression	Student 16	10.44	0.95	91	10.97
	Aggression	Student 17	0.43	0.05	89	9.00
	Aggression	Student 18	34.22	0.00	100	34.22
	Aggression	Student 19	11.01	0.00	100	11.01
	Aggression	Student 20	3.81	0.00	100	3.81
	Aggression	Student 21	11.52	0.05	100	241.99
	Aggression	Student 22	4.83	0.00	100	4.83
	Aggression	Student 23	0.77	0.05	94	16.27
	Aggression	Student 24	1.65	0.95	94	17.3
	Aggression	Student 25	3.51	0.00	100	3.51
	Aggression	Student 26	3.67	0.00	100	3.67
	Aggression	Student 27	14.57	0.24	98	61.22
	Aggression	Student 28	29.18	0.57	98	51.07
	Aggression	Student 29	13.53	0.00	100	13.53
	Aggression	Student 30	20.08	0.52	97	38.33
	Aggression	Student 31	8.67	0.00	100	8.67

Continue...

Study	Behavior	Identifying Label From Original Study	Baseline Converted Frequency Per Day	Treatment Frequency Per Day	Percent Increase or Decrease	Multiply/ Divide By Factor
Israel (2008) [3]	Aggression	Student 32	19.49	0.00	100	19.49
	Aggression	Student 33	29.73	0.00	100	29.73
	Aggression	Student 34	12.19	0.05	100	256.18
	Aggression	Student 35	0.67	0.00	100	0.67
	Aggression	Student 36	13.57	0.38	97	35.61
	Aggression	Student 37	24.92	0.38	98	65.40
	Aggression	Student 38	3.47	0.00	100	3.47
	Aggression	Student 39	17.92	0.00	100	17.92
	Aggression	Student 40	4.89	0.00	100	4.89
	Aggression	Student 41	2.98	0.00	100	2.98
	Aggression	Student 42	1.19	0.00	100	1.19
	Aggression	Student 43	17.54	0.00	100	17.54
	Aggression	Student 44	14.56	0.00	100	14.56
	Aggression	Student 45	2.51	0.05	98	52.82
	Aggression	Student 46	17.34	0.10	99	182.13
	Aggression	Student 47	6.85	0.05	99	143.85
	Aggression	Student 48	30.44	0.05	100	639.44
	Aggression	Student 49	2.39	0.00	100	2.39
	Aggression	Student 50	11.41	0.62	95	18.44
	Aggression	Student 51	30.84	0.00	100	30.84
	Aggression	Student 52	10.94	0.00	100	10.94
	Aggression	Student 53	1.83	0.19	90	9.58
	Aggression	Student 54	1.78	0.00	100	1.78
	Aggression	Student 55	4.33	0.00	100	4.33
	Aggression	Student 56	11.60	0.00	100	11.60
	Aggression	Student 57	24.71	0.00	100	24.71
	Aggression	Student 58	1.60	0.10	94	16.79
	Aggression	Student 59	146.79	1.33	99	110.37
	Aggression	Student 60	2.41	0.00	100	2.41
Israel (2010) [102]	Aggression, health dangerous, destructive, major disruptive, noncompliance	Student 1	116.77	0.43	100	273.23
	Aggression, health dangerous, and noncompliance	Student 2	65.55	0.02	100	2989.51
	Aggression, health dangerous, destructive, major disruptive, noncompliance	Student 3	125.83	0.12	100	1043.82
	Aggression and health dangerous	Student 4	34.12	0.52	98	66.25
	Aggression, health dangerous, destructive, major disruptive, noncompliance	Student 5	213.74	0.03	100	6502.00
	Aggression and health dangerous	Student 6	91.60	0.13	100	696.62
	Aggression, health dangerous, destructive, major disruptive, noncompliance	Student 7	57.63	0.28	100	206.24

Table 12: Converted Frequency Data From Contingent Skin Shock Single Subject Design Studies

	Baseline or Placebo Frequency Per Day	Treatment Frequency Per Day
CSS	5300.23	360.05
FGA	1531.97	1382.91
SGA	282.31	98.10

Table 13: Mean Frequency Per Day During Baseline/Placebo Conditions and Treatment With Contingent Skin Shock, First, and Second Generation Antipsychotic Medications.