Insight in Mental Illness:
Impact on Adverse Effects, Functional Outcome and Treatment Adherence

Joseph F. Goldberg, M.D.
Clinical Professor of Psychiatry
Icahn School of Medicine at Mount Sinai
New York, NY

Disclosure of Conflicts

- Advisor: Avanir, Mylan Pharmaceuticals
- Consultant: Frontline Medical Communications, Medscape
- Speakers' Bureau: AstraZeneca, Mylan Pharmaceuticals, Novartis, Takeda, Sunovion
- Royalties: American Psychiatric Publishing, Inc.
- Research Grants: None
- Employee: None
- Major Stockholder: None

Objectives

- To describe the nature and impact of impaired insight in major psychiatric disorders relative to clinical presentation and treatment outcome.
- To examine relationships between insight, cognitive function and adherence to psychiatric treatment in mood and psychotic disorders

Issues

- How does insight differ across mood and anxiety disorders?
- What is the relationship between insight and psychiatric symptoms or cognitive function
- How do changes in insight affect psychosocial outcome?
- How does insight affect treatment adherence?
- Does effective treatment for mood or psychotic disorders improve insight?

Insight

"The patient's awareness and understanding of their attributions, feelings, behavior, and disturbing symptoms; self-understanding"

- Dorland's Medical Dictionary

Domains:

- Relabeling of symptoms[1]
- Awareness of the need for treatment[2]
- Compliance/adherence

[1] Dam. Nordic J Psychiatry 2006; 60: 114-120
[2] David et al., Br J Psychiatry 1990; 156: 798-808

Assessment of Insight

- Scale for the Assessment of Insight [1]
  - 3 domains: treatment, awareness of illness, and psychotic experiences
- Scale to assess Unawareness of Mental Disorder (SUM-D) [2]
- Birchwood Insight Scale [3]
- Mood Disorders Insight Scale [4]
- Scale for the Assessment of Insight [5]
- Self-Appraisal of Illness Questionnaire (SAIQ) [6]
  - 17-item self-report scale, low scores indicate low awareness of illness

[1] David, *Br J Psychiatry* 1990; 156: 798-808; [4] Sturman & Sproule 2003; [5] Kemp & David, Insight and compliance. In Blackwell B (Ed), Treatment compliance and the therapeutic alliance. Newark, NJ: Gordon & Breach, 2006; [6] Marks et al., Schiz Res 2000; 45: 203-211

Assessment of Insight (cont'd)

Positive and Negative Syndrome Scale (PANSS) Item G12:

G12. LACK OF JUDGEMENT AND INSIGHT - Impaired awareness or understanding of one's own psychiatric condition and life situation. This is evidenced by failure to recognise past or present psychiatric illness or symptoms, denial of need for psychiatric hospitalisation or treatment, decisions characterised by poor anticipation or consequences, and unrealistic short-term and long-range planning.

Basis for rating – Thought content expressed during the interview.

1 **Absent** - Definition does not apply

2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits

3 **Mild** - Recognises having a psychiatric disorder but clearly underestimates its seriousness, the implications for treatment, or the equivalence of taking measures to avoid relapse. Future planning may be poorly reasoned.

4 **Moderate** - Patient shows only a vague or shallow recognition of illness. There may be fluctuations in acknowledgement of being ill or little awareness of major symptoms which are present, such as delusions, disorganised thinking, suspiciousness and social withdrawal. The patient may rationalise the need for treatment in terms of its relieving lesser symptoms, such as anxiety, tension and sleep difficulty.

5 **Moderate Severe** - Acknowledges past but not present psychiatric disorder. If challenged, the patient may concede the presence of some unrelated or insignificant symptoms, which tend to be explained away by gross misinterpretation or delusional thinking. The need for psychiatric treatment similarly goes unrecognised.

6 **Severe** - Patient denies ever having had a psychiatric disorder. He disavows the presence of any psychiatric symptoms in the past or present and, though compliant, denies the need for treatment and hospitalisation.

7 **Extreme** - Emphatic denial of past and present psychiatric illness. Current hospitalisation and treatment are given a delusional interpretation (e.g. as punishment for misdeeds, as persecution by tormentors, etc), and the patient thus refuse to cooperate with therapists, medication or other aspects of treatment.

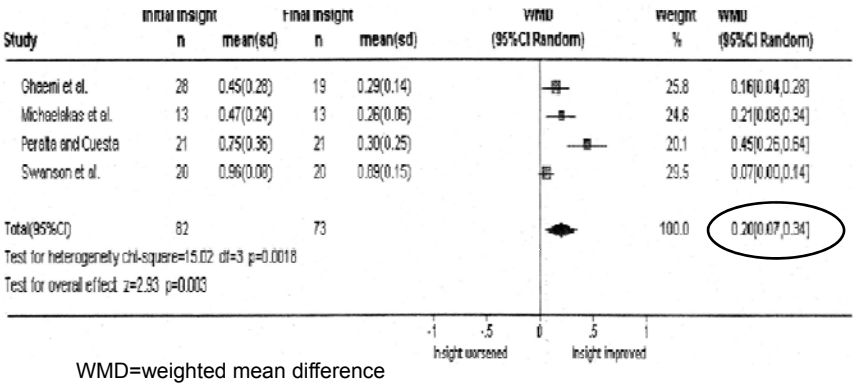
Defining Medication Adherence

- % of medications taken = preferred operational definition of adherence
  - ≥80%: recommended cut-off for adherence in bipolar disorder and schizophrenia
- Leading perceived causes of poor adherence:
  - Poor insight or lack of illness awareness
  - Fear/distress related to specific side effects (notably, weight gain)
  - Inadequate efficacy/persistent symptoms (notably, grandiosity)
  - Believing medications are no longer needed

Velligan et al., The Expert Consensus Guideline Series: Adherence Problems in Patients With Serious and Persistent Mental Illness. *J Clin Psychiatry* 2009; 70 (suppl 4): 1-46

Is Insight in Bipolar Disorder State-Dependent?

Meta-analysis of insight in 4 longitudinal studies in mania.
Insight appears state-dependent, improving by about 20% after recovery from an acute manic episode



WMD=weighted mean difference

Ghaemi et al., *J Nerv Ment Dis* 2004; 192: 771-775

Insight in Bipolar, Unipolar and Anxiety Disorders

- 1-year follow-up of 101 mood and anxiety disorder outpatients

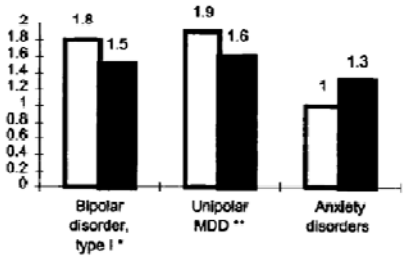


Fig 1. Initial SUMD (□) and final (■) insight ratings by diagnosis. Initial insight was more impaired in bipolar and unipolar v anxiety disorders. Unipolar MDD = nonpsychotic unipolar major depressive disorder. Lower scores on the SUMD indicate greater insight (1 = complete insight, 3 = partial insight, and 5 = complete absence of insight). *Improvement in insight not significant, tied $z = -1.6$, tied $P = .11$, Wilcoxon signed-rank test, n = 30. **Improvement in insight not significant, tied $z = -1.1$, tied $P = .29$, Wilcoxon signed-rank test, n = 25.

Ghaemi et al., *Compr Psychiatry* 2000; 41: 167-171

Change in Insight and Outcome

Baseline insight (SUM-D) not associated with outcome, but *improvement* in insight associated with good outcome in bipolar I patients

Ghaemi et al., *Compr Psychiatry* 2000; 41: 167-171

Table 2. Insight and Outcome in the Total Sample and in Individual Diagnoses

Parameter	Correlation (*r*)	Significance (*P*)
Total sample (N = 101)		
Initial SUMD and final GAF	−.03	.24
Initial SUMD and final CGI	.29	.09
Change SUMD and change GAF	.43	.001
Change SUMD and change CGI	.39	.002
Bipolar disorder type I (n = 37)		
Initial SUMD and final GAF	.24	.33
Initial SUMD and final CGI	.02	.62
Change SUMD and change GAF	.56	.0005*
Change SUMD and change CGI	.67	.0005*
Unipolar major depressive disorder (n = 34)		
Initial SUMD and final GAF	.10	.76
Initial SUMD and final CGI	.28	.57
Change SUMD and change GAF	.50	.03
Change SUMD and change CGI	.36	.14
Anxiety disorders (n = 13)		
Initial SUMD and final GAF	.56	.29
Initial SUMD and final CGI	.23	.27
Change SUMD and change GAF	.52	.41
Change SUMD and change CGI	.49	.26
Bipolar disorder type II (n = 8)		
Initial SUMD and final GAF	.43	.69
Initial SUMD and final CGI	.20	.99
Change SUMD and change GAF	.93	.07
Change SUMD and change CGI	.93	.07

Suicidality Associated with High Insight but Not Executive Dysfunction in Bipolar Outpatients

TABLE 2. Comparison of Insight and Sociodemographic and Clinical Data Between the Bipolar Subjects With and Without Suicidal Ideation or Attempt

	Had Suicidal Ideation or Attempt (*N* = 9)		No Suicidal Ideation or Attempt (*N* = 87)			
	Mean (*SD*)	*N* (%)	Mean (*SD*)	*N* (%)	*Z*[a]	*p*
Insight						
SAI						
Treatment compliance	3.9 (0.3)	—	2.8 (1.2)	—	−2.868	0.004
Awareness of illness	4.6 (1.1)	—	3.0 (2.1)	—	−2.191	0.028
Re-labeling of phenomena	3.3 (0.7)	—	2.2 (1.4)	—	−2.487	0.013
SALF score	20.2 (2.8)	—	13.1 (7.4)	—	−2.650	0.008

TABLE 4. Comparison of Scores for Neurocognitive Function Domains Between the Bipolar Subjects With and Without Suicidal Ideation or Attempt

	Had Suicidal Ideation or Attempt Mean (*SD*)	No Suicidal Ideation or Attempt Mean (*SD*)	*Z*[a]	*p*
Executive function	0.659 (3.424)	−0.068 (3.989)	−0.358	0.720
Memory	0.603 (2.673)	−0.062 (3.776)	−0.534	0.593
Attention	0.410 (1.508)	−0.042 (2.421)	−0.296	0.767
Verbal comprehension	0.845 (3.863)	−0.087 (3.444)	−0.641	0.521
Perceptual organization	0.558 (3.021)	−0.058 (2.987)	−0.811	0.418

[a]Mann-Whitney *U* test.

Yen et al., *J Nerv Ment Dis* 2008; 196: 462-467

Insight Among Bipolar, Schizophrenic and Major Depressive Disorder Patients

27 bipolar, 27 schizophrenia, 27 MDD Italian outpatients and inpatients

	Bipolar disorder			Schizophrenia			Unipolar MDD			F	P
	OP	IP		OP	IP		OP	IP			
Awareness of symptoms (SUMD)	1.92 ± 1.15	all	3.22 ± 1.31	N/A	all	3.37 ± 1.06	1.64 ± 0.75	all	2.17 ± 1.20	9.49	<0.0001
		SS	3.53 ± 1.32		SS	3.65 ± 0.98		SS	2.57 ± 1.70	6.22	
		LS	2.80 ± 1.24		LS	3.095 ± 1.1		LS	1.95 ± 0.89		<0.0001
Attribution of symptoms to the illness (SUMD)	1.56 ± 0.92	all	2.36 ± 1.70	N/A	all	3.13 ± 1.32	2.24 ± 0.9	all	2.22 ± 1.24	2.40	0.05 (n.s.)
		SS	2.77 ± 1.32		SS	3.36 ± 1.48		SS	2.49 ± 1.2		
		LS	2.80 ± 1.24		LS	2.91 ± 1.17		LS	2.08 ± 0.91	1.91	0.08 (n.s.)
Insight	11.33 ± 3.01	all	11.81 ± 5.72	N/A	all	14.45 ± 4.93	13.81 ± 5.7	all	20.18 ± 4.85	5.10	0.001
		SS	10.5 ± 5.66		SS	13.1 ± 4.92		SS	20.5 ± 6.4		
		LS	13.55 ± 5.63		LS	15.8 ± 4.77		LS	20 ± 4.3	3.38	0.003

Post-hoc analysis, Bonferroni correction, with cut-off at p = 0.025. MDD = Major depressive disorder; BP = bipolar disorder; N/A = not applicable; OP = outpatients; IP = inpatients; LS = long-stay inpatients (>3 months); SS = short-stay inpatients (<3 months).

Trevisi et al., *Psychopathology* 2012; 45: 235-243

Insight in Schizophrenia

- Poor insight associated with more (+) and (–) symptoms, relapses/rehospitalizations, poorer quality of life [1]
- *Intact* insight also appears related to more depression and stigmatizing beliefs[1]

Lincoln et al., *Schiz Bull* 2007; 37: 1324-1342

Trait Features of Poor Insight in Schizophrenia

- Comparison of **at-risk** for psychosis (N=14), **1st-episode** SZ (N=16), **multi-episode** SZ (N=18)
- No significant differences across groups
  - **At-risk**: BPRS *psychosis* (-) assoc. w/total insight (β=.55)
  - **1st Episode**: BPRS *psychosis* (-) assoc w/compliance (β=.54), BPRS *anxiety* (+) assoc. w/symptom relabeling (β=.49)
  - **Multi-episode**: BPRS *psychosis* (-) assoc. w/compliance (β=.54); BPRS *anxiety/depression* (+) assoc. w/relabeling (β=.49)

Comparelli et al., *J Nerv Ment Dis* 2013; 201: 229-233

Insight in Schizophrenia Dependent on Cognitive Organization

- N=130 patients with chronic SZ and tardive dyskinesia
- Positive and Negative Symptom Scale (PANSS) disorganized factor (β=0.72, t=11.88, p<0.01) accounted for 52% of the variance in insight into mental illness (adjusted R^2=0.55) ($F_{2,127}$=81.00, p<0.01)
- 51% had little or no awareness of TD; TD awareness was independent of overall insight (PANSS Item G12)

Emsley et al., *Eur Psychiatry* 2011; 26: 293-296

Poor Insight and Neuroplasticity in First Episode vs. Chronic Schizophrenia

1st episode psychosis patients (N=32): symptom misattribution associated with ↑'d increased grey matter in R and L caudate, R thalamus, L insula, putamen and cerebellum.

Chronic schizophrenia (N=30): no significant associations between regional grey matter volume and measures of insight.

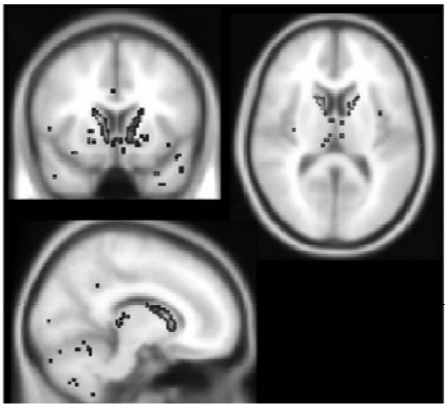


Fig. 1 Association between impaired insight and grey matter excess displayed on MNI space template T1-weighed MRI

McFarland et al., *Eur Arch Gen Psychiatr Clin Neurosci* 2013; 263: 133-141

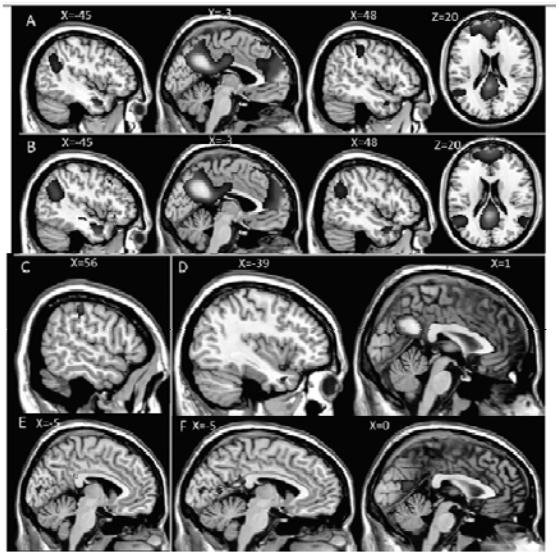
Neuroanatomical Correlates of Poor Insight in Schizophrenia

Table 3. Summary of neuroimaging studies in relation to insight in psychosis. Magnetic resonance imaging (MRI) unless otherwise stated. BIS, Birchwood insight scale; FE, first episode; CT, computed tomography; ITAQ, insight and treatment attitudes questionnaire; OPs, outpatient; PANSS, positive and negative symptoms of schizophrenia scale; PSE, present-state examination; SAI-E, schedule for the assessment of insight (expanded); SUMD, scale for the assessment of unawareness of mental disorder; Sz, schizophrenia patients; FE, first episode; BIS, Birchwood insight scaleVBM, voxel-based morphometry.

first authors (year) (reference)	patients	main findings (association with reduced insight and brain indices)	insight measure
Antonius *et al.* (2011) [90]	Sz ($n = 36$)	fronto-temporal / temp-parietal white matter	SUMD
Berge *et al.* (2010) [91]	Sz, FE ($n = 21$)	↓ medial frontal bilat; sup frontal, R inf temporal, inf frontal grey; VBM	SUMD
Buchy *et al.* (2010) [92]	Sz, FE ($n = 79$)	L frontal, temp (and parietal) cortical thinning	SUMD
Morgan *et al.* (2010) [93]	psychosis, FE ($n = 82$)	↓ posterior cingulate and right precuneus/cuneus grey density	SAI-E
Cooke *et al.* (2008) [88]	Sz/Sz Aff, OPs ($n = 52$)	↓ L temporal and parietal; precuneus grey; VBM	SAI-E/BIS
Sapara *et al.* (2007) [85]	Sz, chronic, OPs ($n = 28$)	↓ prefrontal grey	SAI-E
Shad *et al.* (2006) [86]	Sz ($n = 14$)	↓ R dorsolateral prefrontal and ↓ awareness; ↑ R orbitofrontal and abnormal attributions	SUMD
Bassitt *et al.* (2006) [89]	Sz ($n = 50$)	no assoc. with prefrontal grey/white vols	SUMD
McEwoy *et al.* (2006) [81]	Sz ($n = 251$)	↓ total grey/white/whole brain	ITAQ
Ha *et al.* (2004) [87]	Sz OPs ($n = 35$)	↓ grey L post / R ant. cingulate and bilateral inf. temporal	PANSS
Rossell *et al.* (2003) [11]	Sz (males) ($n = 78$)	no association whole brain, white / grey vols	SAI-E
Laroi *et al.* (2000) [83]	Sz ($n = 20$)	frontal lobe atrophy (CT)	SUMD
Flashman *et al.* (2001) [84]	Sz spectrum ($n = 30$)	↓ frontal lobe volume	SUMD
Flashman *et al.* (2000) [80]	Sz spectrum ($n = 30$)	↓ whole brain volume	SUMD
David *et al.* (1995) [35]	mixed psychosis ($n = 128$)	no association with ventricular vol. (CT)	PSE
Takai *et al.* (1992) [82]	Sz, chronic ($n = 22$)	ventricular enlargement	PANSS

David et al., *Philos Trans R Soc London B Biol Psychiatr* 2012; 367: 1379-1390

Self-Reflection Networks and Insight in Schizophrenia



↓'d activation in the posterior cingulate cortex during self- and other- reflection conditions and less activation in the precuneus in other-reflection condition compared with healthy controls.

Better insight associated with greater response in the inferior frontal gyrus, anterior insula, and inferior parietal lobule during self-reflection.

Better cognitive insight was associated with higher activation in ventromedial prefrontal cortex during self-reflection

Van der Meer et al., Schiz Bull 2012; Oct 12 [Epub ahead of print]

Executive Dysfunction (WCST) Associated with More Unawareness of Illness in Bipolar Disorder, Schizophrenia and Major Depressive Disorder

Total insight score (SUMD total scores) – WCST	95% CI	r	p
Total CAw scores			
Stage number	−0.354 to −0.074	−0.33	0.0033*
Total number of errors	0.016–0.060	0.37	0.0008*
Number of perseverative errors	0.008–0.070	0.28	0.013
Total CAt scores			
Total number of errors	0.005–0.053	0.26	0.017
Insight into the need to take medication			
Total number of errors	0.01–0.05	0.32	0.004*
Number of perseverative errors	1.7–2.5	0.23	0.044
Insight into social consequences of illness			
Total number of errors	0.02–0.07	0.36	0.0014*
Number of perseverative errors	0.01–0.9	0.28	0.013

CAw = Current awareness; CAt = current attribution. The table includes only significant correlations between insight rating scales (SUMD, IS) and WCST. Insight was evaluated with the SUMD and neurocognitive performance with the WCST. The asterisk indicates statistically significant p values.

'Stage' evaluates sustained attention; 'total number of errors' assesses one's ability to learn from errors; 'total number of perseverative errors' evaluates flexibility in performing a task. Bonferroni-adjusted significance: $\alpha = 0.004$ (0.05/14).

WCST associated with clinician-rated unawareness of illness, but not self-rated insight

Trevisi et al., *Psychopathology* 2012; 45: 235-243

Subjective vs. Objective Quality of Life in Bipolar vs. Unipolar Patients at Follow-up

Correlations between dimensions of life satisfaction and objective global functioning

Patient group	Dimensions of life satisfaction				
	Work	Social	Economic	Living situation	Self assessed mental health
Bipolar (N=35)					
2-year follow-up	.42	.38**	.21	.29	.22
4.5-year follow-up	.07	.15	.35	−.08	.21
7–8-year follow-up	.09	.31	.10	.10	.33*
Unipolar psychotic depression (N=27)					
2-year follow-up	−.44	.29	−.52	−.03	.33
4.5-year follow-up	.22	.49**	.22	−.08	.14
7–8-year follow-up	−.10	.15	.26	.32	.03
Unipolar nonpsychotic depressed (N=95)					
2-year follow-up	.27*	.42***	.25	.09	.45***
4.5-year follow-up	.31**	.40***	.56***	.21+	.39***
7–8-year follow-up	.29*	.32***	.45***	.25**	.52***

* $p < .05$.
** $p < .01$.
*** $p < .001$.

Goldberg & Harrow, *J Affect Disord* 2005; 89(1-3): 79-89

Poor Correlations Between Subjective and Objective Cognitive Deficits in Bipolar Outpatients

Pearson correlations between affective symptoms and objective or subjective neurocognitive measures*

Measure (z)	HAM-D_{31}	Y–MRS	CDS	CFQ	PAOF
CVLT-1-5	0.030 (0.861)	−0.173 (0.305)	0.078 (0.646)	0.180 (0.285)	−0.047 (0.783)
CVLT-SD	0.053 (0.754)	−0.240 (0.152)	0.328 (0.048)	0.286 (0.086)	0.095 (0.574)
CVLT-LD	0.132 (0.436)	0.075 (0.660)	0.208 (0.216)	0.157 (0.354)	0.017 (0.919)
Trails A	0.046 (0.789)	−0.029 (0.863)	−0.289 (0.083)	−0.010 (0.955)	−0.238 (0.157)
Trails B	0.074 (0.665)	−0.097 (0.569)	−0.171 (312)	0.077 (0.646)	−0.114 (0.501)
Stroop interference	0.248 (0.139)	−0.104 (0.541)	0.259 (0.121)	0.276 (0.098)	0.128 (0.450)
Digit span	0.120 (0.478)	0.215 (0.202)	0.156 (0.357)	0.151 (0.373)	0.036 (0.833)
Digit symbol	−0.038 (0.825)	0.190 (0.260)	−0.270 (0.106)	−0.260 (0.120)	−0.277 (0.097)
Global z-score	−0.050 (0.767)	−0.152 (0.370)	0.016 (0.924)	0.150 (0.376)	−0.097 (0.568)

*p-values appear in parentheses.

Abbreviations: CVLT=California Verbal Learning Test; CDS=Cognitive Difficulties Scale; CFQ=Cognitive Failures Questionnaire; PAOF=Patient's Assessment of Own Functioning

Burdick et al., *Psychiatr Res* 2005; 136: 43-50

Associations Between Insight and Neurocognitive Function in Bipolar Disorder

96 consecutive remitted Bipolar I Taiwanese outpatients

	Treatment compliance		Awareness of illness		Relabeling of phenomena		SAI-E score	
	β	t	β	t	β	t	β	t
Neurocognitive function								
Executive function	.172	1.688	.277	2.791**	.308	3.140**	.267	2.684**
Memory	.163	1.600	.228	2.273*	.221	2.198*	.219	2.174*
Attention	.040	0.387	.148	1.452	.104	1.018	.136	1.328
Sociodemographic characteristics								
Age	.123	1.199	−.115	−1.117	−.060	−0.583	−.037	−0.359
Education	.169	1.660	.214	2.128*	.225	2.240*	.205	2.027*
Sex: male	.133	1.297	.117	1.140	.064	0.617	.101	0.984
Duration of illness	.170	1.674	.135	1.324	.111	1.079	.123	1.201
No. of previous mood episodes	.114	1.114	.094	0.915	.047	0.453	.059	0.563
Have psychotic pictures	−.162	−1.589	−.069	−0.672	−.134	−1.312	−.124	−1.210
Poor response to mood stabilizers	−.226	−2.249*	−.160	−1.574	−.251	−2.517*	−.217	−2.153*

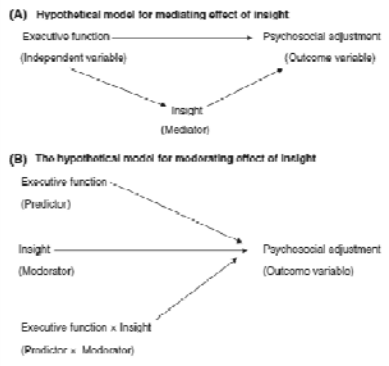
* $P < .05$.
** $P < .01$.

Yen et al., *Compr Psychiatry* 2008; 49: 335-339

Inter-relationships Between Insight and Executive Function on Outcome

96 Taiwanese bipolar and 96 Taiwanese schizophrenia outpatients

For SZ: insight mediates effect between executive function and outcome; baseline insight does not moderate relationship between executive fxn & outcome in either dx group



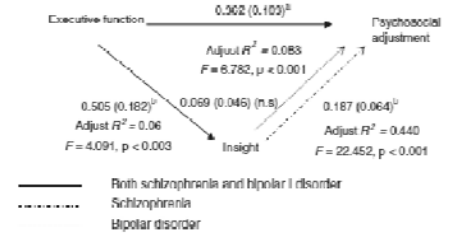


Fig. 2. Associations among psychosocial adjustment, executive function and insight in patients with bipolar disorder and schizophrenia. [a]$p < 0.001$; [b]$p < 0.01$.

Yen et al., *Bipolar Disord* 2009; 11: 190-197

Both Poor Insight and Residual Affective Symptoms Are Associated with Poor Psychosocial Outcome

50 consecutive remitted bipolar Taiwanese outpatients
(mean ± SD YMRS = 0.9 ± 1.7; HAM-D=0.7 ± 1.8)

Table 3. Variables associated with psychosocial adjustment in the first stepwise multiple linear regression

	B	SE	Beta	*t*
Total SAI score	0.365	0.178	0.256	2.051*
Without residual affective symptoms	4.384	1.257	0.434	3.487**

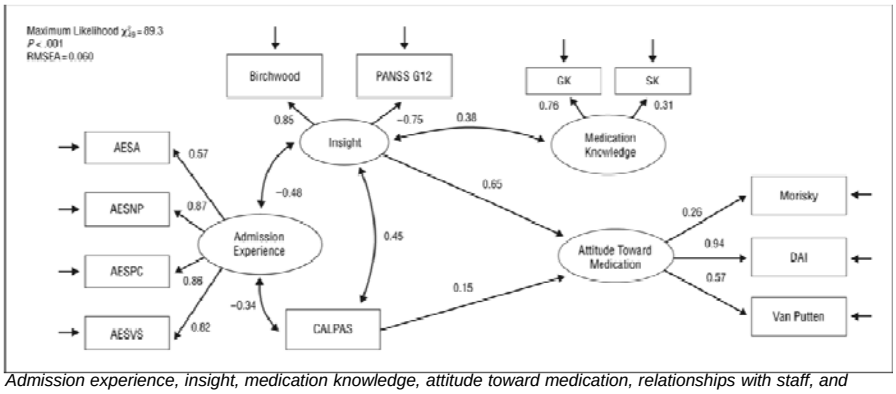
*p < 0.05; **p < 0.01.
SE = standard error; SAI = Schedule of Assessment of Insight.

$F_{2,47}$=9.666, p<.001

Yen et al., *Bipolar Disord* 2007; 9: 737-742

Attitudes Toward Medication in Schizophrenia/Schizoaffective Disorder

Day et al., *Arch Gen Psychiatry* 2005; 62: 717-724



Admission experience, insight, medication knowledge, attitude toward medication, relationships with staff, and symptoms are latent variables. CALPAS=California Pharmacotherapy Alliance Scale; LUNSERS= Liverpool University Neuroleptic Side Effects Rating Scale; AESA=McArthur Admission Experience Survey [AES]–affective reactions to hospitalization; AESNP, AES–negative pressures; AESPC, AES–perceived coercion; AESVS, A ES–voices scale; Birchwood, Birchwood Insight Scale; DAI, Drug Attitude Inventory; GK, general knowledge of medication; Morisky, Morisky Compliance Scale; PEESSC, Perceived Expressed Emotion of Staff Scale (PEESS)–criticism; PEESSI, PEESS–intrusiveness; PEESSS, PEESS–supportiveness; PGEN=PANSS general symptoms subscale; PNEG=PANSS negative symptoms subscale; PPOS=PANSS positive symptoms subscale; SK, specific knowledge of medication; Van Putten=measures subjective experience of medication.

Insight and Adherence in Schizophrenia

Awareness of illness contributes to medication adherence via patients' perceived necessity of antipsychotics. Concerns about antipsychotics are directly negatively related to adherence; specific attitudes about antipsychotics indirectly mediate the relationship between adherence and general distrust of medication

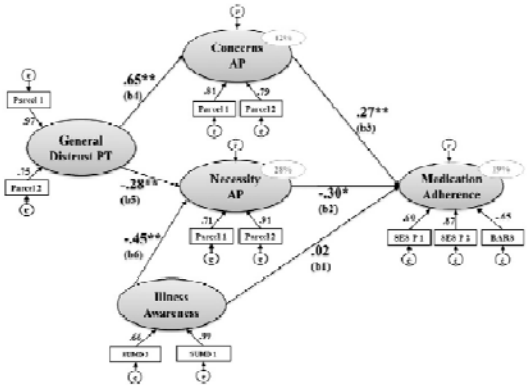


Fig. 2. Hypothesized SEM model with standardized path estimates (N = 150). Note. PT = Pharmacotherapy, AP = Antipsychotics, BARS = Brief Adherence Rating Scale item, SUMD 1 = Global current awareness of mental disorder (The Scale to assess Unawareness of Mental Disorders item 1), SUMD 2 = Current awareness of social consequences of mental disorder (The Scale to assess Unawareness of Mental Disorders item 3), SES P1 = Service Engagement Scale Treatment adherence subscale Parcel 1, SES P 2 = Service Engagement Scale Treatment adherence subscale Parcel 2; high scores of the latent variables Illness Awareness and Medication Adherence indicate low awareness respectively adherence; gray percentage values represent the amount of explained variance by predictors. ** path significant at p ≤ .01. * path significant at p ≤ .05.

Beck et al., *Schiz Res* 2011; 132: 42-49

Self-Stigma Moderates The Relationship Between Insight and Demoralization in Schizophrenia

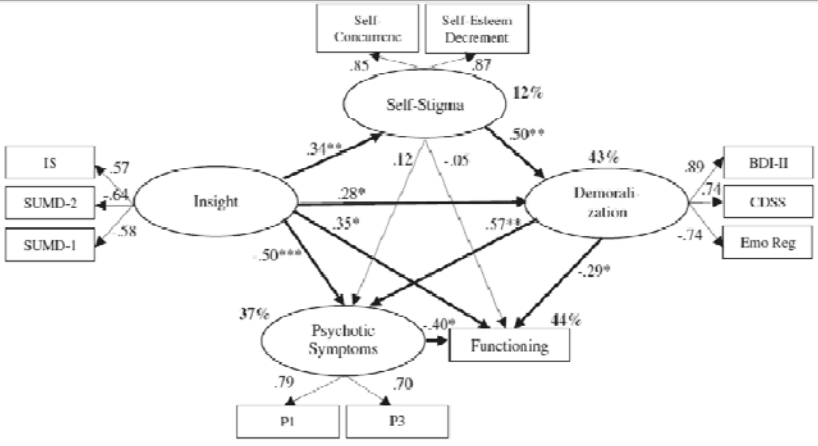


Fig. 3. Self-stigma and demoralization as mediators of the relations of insight with psychotic symptoms and functioning. Structural equation modeling: rectangles represent indicator variables; ovals, latent variables. Numbers by single-headed arrows reflect standardized regression weights. The percentage values represent the amount of explained variance by predictors. Fit indices: $\chi^2 = 33.432$; $df = 35$; $P = .544$; $\chi^2/df = 0.955$; RMSEA, 0.000; CFI, 1.000; TLI, 1.005; AIC, 95.432; ECVI, 0.663. *$P < .05$, **$P < .01$, ***$P < .001$. EmoReg indicates emotional regulation subscale of the Subjective Well-being under Neuroleptics scale-short form; P1/3, items 1 and 3 of the PANSS; Self-Concurrence, self-concurrence subscale of the SSMIS; Self-Esteem Decrement, SSMIS subscale self-esteem decrement; SUMD-1, current symptom awareness subscale of the SUMD; SUMD-2, SUMD subscale current symptom attribution.

Cavelti et al., *Compr Psychiatry* 2012; 53: 468-479

Social Cognition and Clinical Symptoms Impair Insight in Multi-Episode (But Not Recent-Onset) SZ Patients

Table 2. Relationships With Insight for Patients Overall, Patients With ROP and Patients With Multiple Episode Psychosis (MECP)

		Insight Composite Measure									
Patient Group/Model	*df*	$\beta_{Neurocognition}$	$\beta_{Social\ Cognition}$	$\beta_{Clinical\ Symptoms}$	*P*	*F*	*R*	R^2	P_{change}	F_{change}	R^2_{change}
Overall											
Neurocognition	4,262	.250[b]	—	—	<.001	5.540	.279	.078	—	—	—
Social cognition	5,261	.177[b]	.159[a]	—	<.001	5.642	.312	.098	.018	5.655	.020
Clinical symptoms	6,260	.108	.140[a]	−.225[b]	<.001	7.110	.375	.141	<.001	13.141	.043
ROP patients											
Neurocognition	3,53	.011	—	—	.942	.129	.085	.007	—	—	—
Social cognition	4,52	−.019	.051		.975	.118	.095	.009	.763	.092	.002
Clinical symptoms	5,51	−.038	.057	−.069	.986	.127	.111	.012	.684	.168	.003
MECP patients											
Neurocognition	3,206	.315[b]	—	—	<.001	8.621	.334	.112	—	—	—
Social cognition	4,205	.229[b]	.203[b]	—	<.001	8.671	.380	.145	.005	7.950	.033
Clinical symptoms	5,204	.148[a]	.169[a]	−.258[b]	<.001	10.216	.447	.200	<.001	14.165	.056

Note: β = standardized beta coefficient, P_{change}, F_{change}, and R_{change} refer to the statistical significance of the model as compared with its preceding model. Included covariates are gender, age, and phase of illness.
[a]Correlation significant at the 0.05 level.
[b]Correlation significant at the 0.01 level.

Quee et al., *Schiz Bull* 2011; 37: 29-37

Insight in Bipolar Disorder Predicted by Cognitive, Affective and Psychotic Features

- N=85 euthymic or depressed bipolar outpatients from the Netherlands
- Insight assessed via Mood Disorders Insight Scale

$F_{8,76} = 4.508$, $p < 0.0001$, $R^2 = 0.322$

Variable	**β (95% CI)**	**p**
Processing speed	0.180 (0.053 to 0.307)	<.006
Emotional Learning	-0.237 (-0.455 to -0.020)	<.033
History of psychosis	-0.376 (-0.705 to -0.047)	<.026
Depressive symptoms	0.217 (0.060 to 0.374)	<.007
Memory	-0.177	.054

Van der Welf-Eldering et al., *Bipolar Disord* 2011; 13: 343-354

Impact of Insight and Cognition on Therapeutic Alliance

40 SZ subjects underwent CBT for 6 months
Patients with higher insight rated higher strength of therapeutic alliance and more discordance with therapists' ratings of alliance strength

TABLE 1. Correlations Between Overall Therapeutic Alliance With PANSS Component and Awareness of Treatment Need (n = 40 Therapist-Client Dyads)

	Client Rating	Therapist Rating	Difference Between Client and Therapist Rating
Positive symptoms	−0.32*	−0.26	−0.02
Negative symptoms	−0.36*	0.01	−0.37*
Disorganization symptoms	−0.32*	−0.40*	0.08
Awareness of treatment need	−0.44*	−0.21	−0.34*

*$p < 0.05$.

SUM-D (high scores = low insight

Lysaker et al., *J Nerv Ment Dis* 2011; 199: 191-195

Insight and Treatment Adherence in Schizophrenia

- N=104 Taiwanese schizophrenia or schizoaffective chronic inpatients
- MARS= Medication Adherence Rating Scale: 10-item self-report measure of attitudes toward antipsychotic medicines

Model of stepwise multiple regressions—contribution of both clinical variables and rating scale scores to medication compliance[a] (MARS)

Variable	B	SE	Beta	t	P
Constant	9.206	1.104		8.336	<.001
Positive (PANSS)	−0.13	0.072	−0.175	−1.92	.05
Depression (Beck Depression Inventory)	−0.056	0.021	−0.255	−2.635	.01
Outcome/presence (SAIQ)	0.209	0.073	0.275	2.876	.005
Subjective(ESRS)	−0.013	0.043	−0.24	−2.389	.019

[a] Dependent variable: MARS total score. R^2=0.35

Abbreviations: SAIQ=Self-Appraisal of Illness Questionnaire (Insight); ESRS=Extrapyramidal Symptom Rating Scale

Kao & Liu, *Compr Psychiatry* 2010; 51: 557-565

Relationship Between Insight and Treatment Adherence

- N=65 bipolar and 74 schizophrenic Taiwanese remitted outpatients assessed at baseline and 1-year follow-up
- Significant associations between awareness of illness and adherence in bipolars at baseline (r=.38) and follow-up (r=.31) but not among schizophrenia subjects
- Schizophrenia patients tend to show stronger links between medication adherence and insight into the need for medication, rather than insight into psychosis or mental health status

Yen et al., *Psychiatr Clin Neurosci* 2005; 59: 403-409

Relationship Between Insight and Treatment Adherence

- N=42 schizophrenia patients and 24 psychotic mood disorder French patients
- Poor insight (by SUM-D) associated with 1.7x ↑ risk for discontinuing treatment, 1.8x ↑ risk for poor adherence
- Associations maintained after controlling for demographic and illness/severity features

Droulout et al., *Encephale* 2003; 29: 430-437

Poor Insight and Medication Nonadherence in Bipolar Disorder

N=435 veterans with bipolar disorder; 27% with poor adherence by missed doses

Variable	**OR (95% CI)**
Medication insight	1.10 (1.01-1.20)
Psychotherapy insight	1.00 (0.93-1.08)
Hazardous drinking	0.62 (0.35-1.08)
Age (decades)	1.19 (0.94-1.50)
Female	0.34 (0.18-0.62)
African American	0.50 (0.26-0.95)
Other race	0.44 (0.21-0.92)
Mania	0.90 (0.53-1.54)
College	1.49 (0.75-2.97)

Copeland et al., *J Nerv Ment Dis* 2008; 196: 16-21

Insight as a Treatment Target

- In schizophrenia, no clear impact on insight from psychoeducation,[1] psychodynamic therapy,[2] or CBT[3]
- Does not necessarily improve when other symptoms improve

[1] Boczkowski et al., *J Consult Clin Psychol* 1985; 53: 666-671
[2] Gunderson, *Sz Bull* 1984; 10: 564-598
[3] Penn et al., *Sz Res* 2009; 109(1-3): 52-5

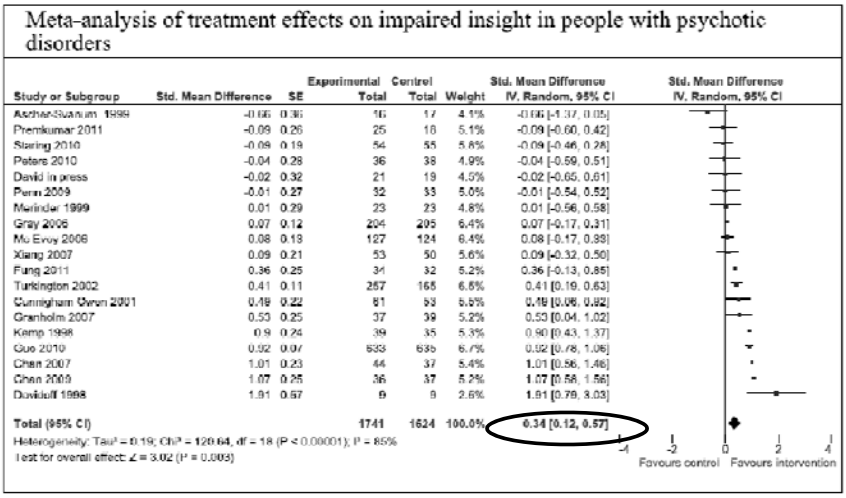
Better Insight Among Outpatients Receiving Pharmacotherapy Plus Psychoeducation than Pharacotherapy Alone

	Drug treatment + psycho-education	Drug treatment alone	χ^2/F	p
Schizophrenia (n = 22)	2 (9.09)	20 (90.91)	4.67	n.s.
Inpatients (n = 22)	2 (9.09)	20 (90.91)	10.44	0.03
Outpatients (n = 0)	0	0		
Bipolar disorder (n = 27)	6 (22.22)	21 (77.78)	4.67	n.s.
Inpatients (n = 21)	3 (14.28)	18 (85.72)	10.44	0.03
Outpatients (n = 6)	3 (50)	3 (50)		
Unipolar depression (n = 32)	11 (34.38)	21 (65.62)	4.67	n.s.
Inpatients (n = 11)	2 (18.18)	9 (81.82)	10.44	0.03
Outpatients (n = 21)	9 (42.86)	12 (57.14)		
Awareness of symptoms (SUMD)	1.99 ± 1.34	2.80 ± 1.23	6.08	0.01
Attribution of symptoms to the illness (SUMD)	2.40 ± 1.21	2.49 ± 1.41	0.06	n.s.
Insight	13.58 ± 4.74	14.32 ± 6.09	0.23	n.s.

Figures are numbers with percentages in parentheses or means ± SD.

Trevisi et al., *Psychopathology* 2012; 45: 235-243

Treatment Associated with Overall Medium Effect on Insight in Schizophrenia



Pijnenborg et al., *Schiz Res* 2013; 144(1-3): 109-117

Insight at Baseline Increases Suicide Risk, But Greater Insight Over Time Reduces Suicide Risk in Schizophrenia

TABLE 1. Cox Proportional Hazards Analysis Predicting Time to Suicide by Illness Awareness and Depression in 980 Patients With Schizophrenia or Schizoaffective Disorder Over 2 Years[a]

Baseline Variable	Parameter Estimate	SE	χ^2 (df=1)	p	Hazards Ratio
Treatment group (olanzapine, clozapine, or no treatment)	−0.128	0.137	0.87	0.35	0.880
Sex	−0.279	0.142	3.85	0.05	0.757
Age group (years)					
33–44	−0.264	0.152	2.99	<0.09	0.768
≥45	−0.450	0.189	5.66	<0.02	0.638
Awareness of psychiatric illness[b]	0.104	0.085	1.48	<0.23	1.110
Depression	0.146	0.011	175.59	0.001	1.158

[a] With control for site differences.
[b] Measured with item 12 of the Scale of Functioning (14).

Increases in awareness of illness were associated with a ↓'d risk for suicide events (HR=0.75, p<.0001)

Bourgeois et al., *Am J Psychiatry* 2004; 161: 1491-1496

Published Pharmacotherapy Trials Demonstrating Improvement in Insight

- Schizophrenia:
- Bipolar Disorder:

So, What Can We Conclude?

- How does insight differ across mood and anxiety disorders?
  - Trait phenomenon in SZ, transient in BP (mania); worse in BP, SZ or MDD than in anxiety disorders
- What is the relationship between insight and psychiatric symptoms or cognitive function
  - Greater insight may be associated with more severe depression
  - Executive dysfunction associated w/poorer insight across dx's
  - Neurodegenerative changes may be associated with loss of insight in multi-episode patients
- How do changes in insight affect psychosocial outcome?
  - In bipolar disorder: better insight => better outcome although some data also suggest better insight increases suicide risk
  - Poor insight and residual sxs independently contribute to poor outcome
- How does insight affect treatment adherence?
  - Poorer insight => poorer adherence
- Does effective treatment for mood or psychotic disorders improve insight?
  - To a moderate degree; but insight *per se* has seldom been the focus of outcome studies