

Supplemental Table 1

Demographic Characteristics of the Three Samples

	University of Hawaii at Manoa (n = 250)	University of California, Irvine (n = 432)	Genomic Psychiatry Cohort (n = 188)
Age	20.67 (3.95)	20.81 (3.34)	53.86 (10.76)
Race			
American Indian or Alaska Native	0.4%	4.2%	0%
Asian	37.2%	39.4%	0.5%
Black or African American	2.0%	2.8%	5.2%
Native Hawaiian or other Pacific Islander	3.2%	1.2%	0%
White/Caucasian	27.6%	31.5%	81.2%
Multiracial	27.2%	9.0%	7.3%
Other	2.4%	12.0%	5.2%
History of Treatment			
Depression	16.8%	12.3%	4.7%
Anxiety	7.0%	6.3%	-
Substance Use	0.4%	0.2%	-
Eating Disorder	1.6%	0.5%	-
Relationship or Family Problems	3.3%	4.7%	-
Other	4.9%	4.4%	0.76%
Schizophrenia or Schizoaffective	-	-	50.5%
Bipolar Disorder	-	-	41.1%
No Treatment	66.0%	71.6%	0%
Sex (% Female)	65.2%	79.4%	48.44%

Supplemental Table 2

Conceptual definitions of thought disorder constructs

Construct	Conceptual Definitions
Thought Disorder Constructs	
Reality Distortion	<p>Sensations and perceptions that are inconsistent with the stimuli in one's environment, including hallucinations (in all sensory modalities), delusions, and cognitive distortions.</p> <p>Example item: I saw things others could not see.</p>
Disorganization	<p>Verbal manifestations include tangentiality and derailment, and incoherent speech. Cognitive manifestations are illogical, circumstantial, or concrete thought processes. Behavioral manifestations are bizarre or stereotyped behavior or bizarre appearance.</p> <p>Example item: I struggled with organizing my thoughts.</p>
Dissociation	<p>Person experiences disconnection from self (depersonalization), their perception (de-realization), past events and memories (amnesia), and current physical surrounding (absorption). Rich imaginary/fantasy life that at times becomes the focus rather than immediate surrounding is part of the content as well as episodes of trance states and autonomous behavior.</p> <p>Example item: I felt that things around me were not real.</p>
Eccentricity	<p>Odd, unusual, or bizarre behavior, appearance, and/or speech; having strange and unpredictable thoughts; saying unusual or inappropriate things.</p> <p>Example item: People told me that some of my thoughts were really strange.</p>
Fantasy Proneness	<p>Tendency to fantasize, daydream, and become fully engrossed in one's thoughts and experiences, sometimes to the extent of becoming distracted and losing sight of reality.</p> <p>Example item: I was prone to daydreaming.</p>
Unusual Experiences	<p>Unusual experiences, including perceptual distortions that do not correspond to reality, aberrant salience, and dissociation or detachment from reality, one's surroundings, or oneself.</p> <p>Example item: I experienced strange sights or sounds.</p>

Supplemental Table 2 Continued

Conceptual definitions of thought disorder constructs

Construct	Conceptual Definitions
Unusual Beliefs	<p>Tendency to hold unfounded and irrational thoughts, beliefs, and ideas about the world, including beliefs about the powers of oneself, others, and objects to control and influence others and the physical world.</p> <p>Example item: I dreamed about things before they happened.</p>
Anomalous Self-Experiences	<p>Disturbances in the subjective experience of the self, including consciousness, cognition, self-awareness, identity, body, and attitudes.</p> <p>Example item: I felt like my thoughts were not my own.</p>
Detachment Constructs	
Inexpressivity	<p>Having affect that is unreactive to stimuli that would normally elicit an emotional response. This may be reflected in: limited spontaneous gesturing, poor eye contact, alolia, limited vocal intonation, as well as a limited range and incidence of facial expressions.</p> <p>Example item: People told me that I do not show emotions.</p>
Avolition	<p>Physically inert, manifest in long periods of time spent without any spontaneous activity. Individuals may lack motivation to maintain hygiene and engage in self-care. Avolition also encompasses a lack of motivation to engage in productive activities, interpersonal relationships, and inattention to socially-salient stimuli.</p> <p>Example item: I spent a lot of time just sitting around.</p>
Emotional Detachment	<p>Person tends to be emotionally distant and reserved. Emotional states are inert to people and environment, and emotions lack intensity. Person has difficulties in the experience, description, and expression of feelings.</p> <p>Example item: I was not comfortable opening up to others.</p>
(low) Exhibitionism	<p>Those with low exhibitionism do not enjoy being the focus of attention and try to avoid being noticed. They shun the limelight and behave in ways that will not draw the attention of others</p> <p>Example item: I didn't like being the center of attention.</p>

Supplemental Table 2 Continued

Conceptual definitions of thought disorder constructs

Construct	Conceptual Definitions
Anhedonia	<p>General deficits in positive emotions and energy levels. High scorers report difficulties experiencing joy and excitement, show little interest in things, and exhibit lethargy, lassitude, and psychomotor slowness.</p> <p>Example item: I found that I did not enjoy anything I did.</p>
Apathy	<p>Lowered interests, emotions, energy, enthusiasm, concern, or motivation.</p> <p>Example item: I didn't have much energy.</p>
Social Withdrawal	<p>Avoidance of interpersonal interactions and a preference for being alone that is guided by a genuine disinterest in interacting with others.</p> <p>Example item: I was happiest when I was alone.</p>
Romantic Disinterest	<p>General lack of interest in, desire for, and enjoyment of sex, eroticism, and interpersonal intimacy.</p> <p>Example Item: I had no interest in romantic relationships.</p>
Suspiciousness	<p>A tendency to question the honesty, motives, fidelity, loyalty, and believability of others, as well as a general attitude of jaded negativity, especially a general disbelief in the integrity or professed motives of others. Prone to ascribing malicious intent to the behavior of others.</p> <p>Example item: I thought most people had hidden motives.</p>
Restricted Affectivity	<p>Limited emotional expression and experience, including experience and expression of joy, warmth, and/or emotional connection.</p> <p>Example item: I was very limited in emotionality.</p>
Decreased Need for Sleep	<p>This construct centers on a reduced need for sleep. The individual may report not feeling sleepy or tired, despite sleeping less than usual. The individual feels little need to sleep, and may in fact go for days without sleep.</p> <p>Example Item: I needed much less sleep than usual.</p>
Emotional Lability	<p>This construct involves sudden, rapid, dramatic mood swings. The individual's mood state may change significantly (e.g., from happy to irritable, or from happy to sad) quickly and for no apparent reason. High scorers report that their emotions are unstable and unpredictable. They are "emotional"; their emotional states tend to be intense and are easily aroused, and may be out of proportion to events and circumstances.</p> <p>Example item: I had sudden, intense mood swings.</p>

Supplemental Table 2 Continued

Conceptual definitions of thought disorder constructs

Construct	Conceptual Definitions
Euphoric Mood/ Excessive Energy	<p>This construct involves elevated mood states in which the individual feels extremely “up”, elated, euphoric, and “on top of the world.” This elevated mood state also is associated with feeling “hyper” and experiencing excessive levels of energy and activation. At the behavioral level, the individual may display a level of energy and activity that others can’t match.</p> <p>Example item: I had so much energy that others couldn’t keep up with me.</p>
Grandiosity/ Overconfidence	<p>This construct involves feelings of grandiosity/delusions of grandeur in which the individual feels that he/she can do remarkable things that cannot be achieved by others. Related to this, the affected individual is overly optimistic and self-confident, and feel capable of doing things that actually are beyond/his/her ability. They may also have extreme ambitions.</p> <p>Example item: I felt that I was someone very important or powerful.</p>
Hyperactive Cognition	<p>This construct includes symptoms such as flight of ideas (i.e., thoughts racing and jumping around from one thing to another), pressure of speech (i.e., thoughts occurring so quickly that it is difficult to put them into words) and distractibility (i.e., attention easily is swayed and diverted by relatively unimportant stimuli in the environment).</p> <p>Example item: My thought kept jumping from one thing to another.</p>
Increased Goal- Directed Activity	<p>This construct assesses an increased motivation to pursue rewarding goals, including highly ambitious goals that may be very difficult (even impossible) to obtain. High scorers show persistence in pursuing goals; they are sensitive to positive, rewarding events and often show excessive goal pursuit after experiencing such events.</p> <p>Example item: I tried to do something that others said was impossible.</p>
Recklessness	<p>This construct concerns risky, reckless reward-seeking behavior that causes problems for the affected individual. Specific examples of risky pleasure-seeking behavior include reckless spending (e.g., shopping sprees, risky driving, and hypersexual behavior). The person may feel invincible, as if nothing can hurt them.</p> <p>Example item: I felt that nothing could hurt me.</p>

Supplemental Table 3

Loadings of the scale-level exploratory factor analysis for the total sample

Construct	Total Sample		Serious Mental Illness	
	Positive	Negative	Positive	Negative
Unusual Beliefs	0.916*	-0.140*	0.821*	-0.055
Reality Distortion	0.892*	-0.045	0.932*	-0.062
Expansive Mood	0.887*	-0.221*	0.877*	-0.165
Dissociation	0.875*	0.071	0.946*	-0.004
Unusual Experiences	0.875*	0.050	0.902*	0.026
Grandiosity	0.875*	-0.227*	0.885*	-0.228
Anomalous Self-Experiences	0.807*	0.154*	0.777*	0.191
Eccentricity	0.738*	0.150*	0.807*	0.068
Disorganization	0.736*	0.188*	0.908*	0.004
Recklessness	0.736*	0.010	0.686*	0.109
Decreased Need for Sleep	0.660*	-0.003	0.592*	0.143
Hyperactive Cognition	0.650*	0.142*	0.882*	0.008
Fantasy Proneness	0.625*	0.189*	0.695*	0.184
Increased Goal-Directed Activity	0.610*	-0.131*	0.668*	-0.085
Emotional Lability	0.569*	0.187*	0.756*	0.075
Suspiciousness	0.510*	0.388*	0.477*	0.405*
Avolition	-0.010	0.928*	0.206*	0.689*
Social Withdrawal	-0.059	0.919*	-0.079	0.964*
Anhedonia	0.038	0.890*	-0.007	0.941*
Romantic Disinterest	0.109	0.706*	0.114	0.688*
Emotional Detachment	0.183*	0.672*	0.319*	0.627*
Apathy	0.203*	0.660*	0.206*	0.666*
Restricted Affectivity	0.165*	0.651*	0.206	0.689*
Inexpressivity	0.398*	0.490*	0.446*	0.415*
Exhibitionism	0.384*	0.445*	0.434*	0.353*

Supplemental Table 4

Final Preliminary Scales from Phase 1 Data Analyses

Scale	Total Sample		Psychosis Sample		Total unique items
	Number of items	Omega	Number of items	Omega	
Dissociation	13	0.898	10	0.878	16
Delusions	10	0.866	8	0.801	17
Hallucinations	10	0.898	10	0.878	16
Disorganization	10	0.895	10	0.922	10
Eccentricity	8	0.878	NA	NA	9
Suspiciousness	10	0.901	14	0.923	15
Fantasy Proneness	10	0.858	NA	NA	7
Grandiosity	8	0.740	10	0.825	10
Expansive Mood/ Decreased Sleep	10	0.844	10	0.896	13
Recklessness	8	0.790	NA	NA	8
Restricted Affectivity	10	0.901	NA	NA	7
Anhedonia	11	0.914	13	0.930	18
Avolition	6	0.800	NA	NA	6
Social Withdrawal	10	0.889	12	0.921	18
Romantic Disinterest	9	0.785	10	0.769	12
(low) Exhibitionism	9	0.844	10	0.752	10
Emotional Lability	7	0.877	NA	NA	6
Inexpressivity	10	0.815	10	0.793	10
Intimacy Avoidance	NA	NA	10	0.870	7

Note: Eight items were selected for different preliminary scales in the two samples. These items were not included in phase 2 data analysis

Supplemental Table 5: Items Comprising Preliminary Scales

Dissociation (16 items)

- 1) I felt unreal.
- 2) People told me that my clothing was unusual.
- 3) I felt like I was very different from everyone else, almost as if I wasn't human.
- 4) I felt like I no longer existed.
- 5) I didn't know what part of me was in charge.
- 6) I felt like my thoughts were not my own.
- 7) People found my appearance off-putting.
- 8) My life felt like a dream.
- 9) I had blank spells or periods of missing time.
- 10) I had an imaginary friend that I interacted with.
- 11) I felt that things around me were not real.
- 12) I felt like ordinary familiar objects looked somehow different or strange.
- 13) I experienced my thoughts as if they were outside of my head.
- 14) I felt like I was outside of my body.
- 15) I had trouble telling whether something really happened or I just imagined it.
- 16) I had a hard time figuring out if something was real or a dream.

Delusions (17 items)

- 1) I felt that people were trying to poison me.
- 2) I felt that a dangerous group of people was spying on me.
- 3) I could communicate with others across time.
- 4) My thoughts slowly disappeared from my head.
- 5) I understood the language of animals.
- 6) I got lost in my thoughts and didn't pay attention to things around me.
- 7) I dreamed about things before they happened.
- 8) I found myself in a place without knowing how I got there.
- 9) People didn't get what I was saying.
- 10) I could control things with my mind.
- 11) I believed people can communicate telepathically.
- 12) When I got home, I found that things had been moved, although no one had been there.
- 13) I believed that I had special natural or supernatural gifts beyond my talents and natural strengths.
- 14) I thought it may be possible for other people to read my mind, or for me to read others' minds.
- 15) I believed other people could actually hear my thoughts.
- 16) Special messages were written in papers or announced on TV just for me.
- 17) I thought I was the only one chosen by God for a special role.

Hallucinations (16 items)

- 1) I experienced strange sights or sounds.
- 2) I smelled things that were not actually there.
- 3) I saw things that were not really there.
- 4) I experienced strong smells that no one else noticed.
- 5) I had a strong burning or tingling sensation in my body.
- 6) Ordinary lights and sounds felt so strong that I could not shut them out.
- 7) At times, ordinary colors seemed unusually bright to me.
- 8) I saw a person but then realized it was just a shadow.
- 9) I felt as if my body was melting into things around me.
- 10) I heard voices talking to each other.
- 11) I heard voices commenting on my behavior.
- 12) I heard strange sounds in the music that others could not hear.
- 13) I heard things that no one else could hear.
- 14) I saw things that others could not see.
- 15) I had a sensation that something was crawling under my skin.
- 16) At times, I sensed an evil presence around me.

Disorganization (10 items)

- 1) I went off track when I tried to explain something.
- 2) I could not stay focused on what I was doing.
- 3) My thoughts came so quickly that I had trouble putting them into words.
- 4) I struggled with organizing my thoughts.
- 5) Other people couldn't keep up with what I was saying.
- 6) I forgot what I was trying to say when talking.
- 7) I lost my train of thought.
- 8) I did things without paying attention to what I was doing.
- 9) My thoughts kept jumping from one thing to another.
- 10) Thoughts were racing through my head.

Eccentricity (9 items)

- 1) Many people thought that my behavior was really strange.
- 2) People told me that some of my thoughts were really strange.
- 3) I thought about things in unusual ways.
- 4) I said inappropriate things.
- 5) I said unusual things.
- 6) I was an unusual person.
- 7) People said I am strange.
- 8) People told me that I was being inappropriate.
- 9) Other people thought my beliefs were weird.

Suspiciousness (15 items)

- 1) I thought other people were generally mean and dangerous.
- 2) I was very suspicious of other people.
- 3) I felt that other persons were acting against me.
- 4) People lied to me.
- 5) I was the only person who looked out for me.
- 6) I was very distrustful of others.
- 7) Many people tried to take advantage of me.
- 8) There were a lot of people out to get me.
- 9) I thought it was best to be on guard with people that I don't know well.
- 10) I thought most people had hidden motives.
- 11) People talked about me behind my back.
- 12) I was suspicious of people that seemed too nice.
- 13) People acted nice only to get something from me.
- 14) I doubted that people had my best interests in mind.
- 15) I felt that most persons can't be trusted.

Fantasy Proneness (7 items)

- 1) I was prone to daydreaming.
- 2) My fantasies felt very real to me.
- 3) I wished I lived in my fantasies instead of real life.
- 4) My mind wandered far away from the present.
- 5) My imagination held my attention for hours.
- 6) Hours went by without notice when I read or watched something interesting.
- 7) I lost myself in a fictional character.

Grandiosity (10 items)

- 1) I felt that some people can see into the future.
- 2) I felt like I could do anything.
- 3) I was so confident that I didn't consider the consequences of my actions.
- 4) I felt that I am destined to be someone very important.
- 5) I could explain my thoughts well.
- 6) I felt that I had special talents or powers, like controlling things with my mind or knowing the future.
- 7) I felt I could do things that no one else could.
- 8) I felt I had a message or purpose that would help everybody.
- 9) I felt that I was someone very important or powerful.
- 10) I thought I was on a mission from a higher power.

Expansive Mood/ Decreased Sleep (13)

- 1) I felt like I was "on top of the world."
- 2) I spoke so fast that people could not follow me.
- 3) I had much more energy than usual.
- 4) I felt like I could go for days without sleeping.
- 5) I needed much less sleep than usual.
- 6) I did not feel tired, even though I was sleeping less than usual.
- 7) I felt like I could keep going and going without ever getting tired.
- 8) I had days when I never got tired.
- 9) Others noticed that I was unusually excited or "up."
- 10) I felt a lot more hyper or active than usual.
- 11) I was so excited I could not sleep.
- 12) I was much more talkative than usual.
- 13) I had so much energy that others couldn't keep up with me.

Recklessness (8 items)

- 1) I spent money recklessly.
- 2) I went on shopping sprees and spent a lot more money than usual.
- 3) I made some reckless decisions.
- 4) I felt so happy that I used a lot more alcohol or drugs than usual.
- 5) I did things that were unusual for me and could have caused trouble.
- 6) I was much more interested in sex than usual.
- 7) I drove dangerously.
- 8) I engaged in risky sexual activity.

Restricted Affectivity (7 items)

- 1) I did not experience or express strong feelings for others.
- 2) People saw me as unfeeling.
- 3) I was not a particularly emotional person.
- 4) I was very limited in emotionality.
- 5) I hardly showed any feelings.
- 6) I had trouble feeling empathy for others.
- 7) I didn't respond to things that other people found emotional.

Anhedonia (18 items)

- 1) There was very little that I found enjoyable.
- 2) I didn't pay attention to my appearance.
- 3) I did not do any hobbies or other fun activities.
- 4) There wasn't much that interested me.
- 5) Food didn't taste good to me.
- 6) I didn't find much pleasure in the things that most people enjoy.
- 7) Nothing really gave me pleasure.
- 8) I wasn't interested in anything.
- 9) Life was boring.
- 10) I didn't get excited about very much
- 11) I didn't feel like doing anything, not even things I used to enjoy doing.
- 12) Compared to other people, I found it hard to enjoy things.
- 13) I did not spend much time taking care of myself (e.g., brushing my teeth, trimming my nails, combing my hair).
- 14) There wasn't much I looked forward to.
- 15) I had no interest in my usual social activities.
- 16) I couldn't get enthusiastic about anything.
- 17) I found that I did not enjoy anything I did.
- 18) I didn't experience the joy and pleasure that most other people do.

Avolition (6 items)

- 1) I didn't have much energy.
- 2) I didn't have the energy to participate in many common activities.
- 3) I had a hard time keeping my home clean and tidy.
- 4) I spent a lot of time just sitting around.
- 5) I slept in or stayed in bed instead of starting my day.
- 6) For a while, I did not do anything productive (e.g., work, school, chores).

Social Withdrawal (18 items)

- 1) I found it hard to take initiative when it comes to meeting other people.
- 2) I preferred not to get close to people.
- 3) I didn't particularly enjoy spending time with people.
- 4) I did not feel like spending time with people.
- 5) I did not reach out to friends or family.
- 6) I tended not to get close to people.
- 7) I did not enjoy being around people.
- 8) I felt that meeting new people was more effort than it's worth.
- 9) I was not interested in getting involved in clubs, games, or parties.
- 10) I tended to avoid social situations.
- 11) I avoided going to parties.
- 12) I was happiest when I was alone.
- 13) When I was with other people, I tended to keep to myself.
- 14) I preferred to stay home than to go to a party.
- 15) I would rather be alone on the weekend.
- 16) I would rather be alone than with a large group of persons.
- 17) When I have the chance, I choose to be alone rather than to be with other people.
- 18) I was not comfortable opening up to others.

Romantic Disinterest (12 items)

- 1) Physical contact with others was important to me.
- 2) I felt motivated.
- 3) I thought a lot about sex.
- 4) I realized that I am happiest when I am in a romantic relationship.
- 5) I felt that I wanted to share my life with a partner.
- 6) I found dating to be a rewarding experience.
- 7) I had a fulfilling romantic relationship.
- 8) I thought about my ideal partner.
- 9) It felt good to spend time with others.
- 10) I enjoyed listening to music.
- 11) I enjoyed going to parties.
- 12) I laughed out loud.

(low) Exhibitionism (10 items)

- 1) I tried to keep a low profile in public.
- 2) I loved the feeling of being noticed by others.
- 3) I took every opportunity to show others what I can do.
- 4) I did things to get others to notice me.
- 5) I enjoyed other people noticing me.
- 6) I didn't like being the center of attention.
- 7) People thought I was a "show off."
- 8) I dressed so as to call attention to myself.
- 9) I liked it when I could tell that people were watching me.
- 10) I was happiest when I could gain the attention of others.

Emotional Lability (6 items)

- 1) I had sudden, intense mood swings.
- 2) My moods were intense and unpredictable.
- 3) My mood changed suddenly for no good reason.
- 4) I quickly went from being sad to being happy.
- 5) My life was an emotional roller coaster.
- 6) People told me that I was moody.

Inexpressivity (10 items)

- 1) People told me that I do not show emotions.
- 2) My voice was mostly monotone.
- 3) I sat perfectly still for a long time.
- 4) My tone of voice was very flat.
- 5) I talked much more slowly than other people.
- 6) When someone asked me a question, it took me a while to figure out how to reply.
- 7) People told me that I never smile.
- 8) People had trouble reading emotions on my face.
- 9) I didn't express my emotions.
- 10) I didn't make eye contact when talking to people.

Intimacy Avoidance (7 items)

- 1) I was not comfortable opening up to others.
- 2) I had no close relationships in my life.
- 3) I broke off a relationship (or thought about it) because it got too close.
- 4) I ended a romantic relationship that started getting close.
- 5) I felt that I did not want to be in a close relationship.
- 6) I had no interest in romantic relationships.
- 7) Interacting with others was not very important to me.