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Name of Candidate: John Fitzgerald

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Thesis and Abstract Approved: 

Jason Schiffman, Ph.D.

Professor

Human Services Psychology Program

Date Approved: 8/9/21

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ABSTRACT

Title: **PRELIMINARY VALIDATION OF A NEW MEASURE OF DURATION OF UNTREATED PSYCHOSIS: THE SIPS-DUP**

John C. Fitzgerald

Directed By: **Jason Schiffman, Ph.D, Professor,**
Department of Psychology,
Human Services Psychology Program

A growing body of research suggests that, for those who develop a psychotic illness, early detection of symptoms and initiation of treatment is associated with improved clinical and functional outcomes, as well as reductions of positive symptoms (experiences that are in excess of otherwise typical functioning, and include hallucinations, delusions, and/or disorganized behavior) and intensive service use (e.g., emergency room and inpatient hospitalization). Early intervention is also cost effective and instills a more positive and helpful impression of the mental health system (Lucksted et al., 2015). In studies exploring both immediate and distal effects of the first episode of psychosis, researchers have found that the duration of untreated psychosis (DUP), the time between the emergence of psychotic symptoms and adequate treatment, may impact illness course and treatment response (Kane et al., 2016). Although there are several instruments frequently used to measure DUP in people within their first episode of psychosis, these are primarily derived from approaches that consider fully manifested psychosis as the point of reference at which evaluation should be initiated. Given the possibility of identifying psychosis risk prior to full threshold symptoms, and the benefits of a short DUP, there is compelling rationale to improve upon measurement strategies of DUP. The current study evaluated the validity of a new tool designed to assess DUP based on a

modified version of the Structured Interview for Psychosis-risk Syndromes (SIPS), the gold-standard interview for assessing risk for psychosis. Consistent with other measures of DUP, the new measure was associated with various positive and negative symptoms of psychosis, indicating some preliminary construct validity for the tool. This initial psychometric validation provides support for a measure that possesses methodological advantages relative to existing tools of DUP measurement.

PRELIMINARY VALIDATION OF A NEW MEASURE OF DURATION OF UNTREATED PSYCHOSIS: THE SIPS-DUP

By

John C. Fitzgerald

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Preliminary Validation of a New Measure of Duration of Untreated Psychosis: The SIPS-DUP

Psychosis

An episode of psychosis is characterized by an array of atypical cognitive processes, behavioral patterns, belief systems, and/or perceptual experiences that may lead to distorted perceptions of reality and reduction of overall functioning. The development of these experiences may manifest as unwarranted paranoia (e.g., others being out to harm them), grandiosity (i.e., inflated sense of self or ability), ideas of reference (i.e., ambiguous experiences being perceived as personally significant), or hallucinations (e.g., hearing or seeing things that others do not see or hear) on a regular basis (American Psychiatric Association, 2013). These "positive" symptoms (so named as they represent behavioral excess) contribute to a diagnosis of psychosis once they manifest for a significant portion of time over the course of at least one month, while negatively impacting social, occupational, or other areas of functioning. Psychosis is also characterized by the presence of "negative" symptoms, which are deficits in what would otherwise be typical behavior, including anhedonia, blunted affect, decreased sociability, impoverished speech, and avolition.

The effects of positive and negative symptoms extend beyond these initial stressors (e.g., fear from hallucinations, difficulty with recall due to impoverished speech, etc.) and may be associated with various types of functional impairment, psychiatric comorbidities, and aversion to help-seeking (Buckley, Miller, Lehrer, & Castle, 2009; Dixon, Goldman, Srihari, & Kane, 2018; Skeate, Jackson, Wood, & Jones, 2002). For example, if one develops an unwarranted belief system that authority figures are "out to get them" during an episode of psychosis, they may experience a subsequent increase in

social withdrawal or other anxious symptoms, contributing to a decline in functioning and perhaps an aversion to help-seeking behavior, with treatment aversion leading to more symptoms creating a negative and iterative cycle.

While on the surface it might seem that an initial episode of psychosis begins unambiguously, it is actually much more complicated and tends to develop more slowly than an acute "break." These symptoms do not necessarily arrive en masse, but rather sporadically and over time, making reliable detection of a first episode a common barrier to treatment. Moreover, psychiatric comorbidities such as depression or anxiety may hinder one's willingness to disclose positive symptoms, while behavioral shifts such as withdrawal or decline in academic performance may be incorrectly attributed to normative changes in early adulthood (Spear, 2000). In these situations, misdiagnosis can be of particular concern given the insidious nature of psychosis and the importance of targeted care. This, and other sources of poor identification and help-seeking (e.g., stigma, lack of community awareness, lack of personal insight, disconnect with social support networks, etc.), can often lead to delays in care after a person has developed psychosis (Gayer-Anderson & Morgan, 2013; McGlashan, 1999). On average, psychosis remains untreated for approximately one to three years in the United States (Addington et al., 2015), necessitating a more thorough understanding for how psychosis develops and how to detect it earlier.

Development of Psychosis

Psychosis etiology. With an average onset of around 22 and 25 years old for men and women respectively, approximately 100,000 young people in the US will experience a first episode of psychosis each year (NIMH, 2015). Psychosis is often conceptualized

within the “diathesis-stress model” of illness development, which posits that the onset of a psychotic episode may be attributed to a combination of innate and environmental factors (Howes & Murray, 2014; van Os, Rutten, & Poulton, 2008). This model suggests that psychosis is first precipitated by a genetic predisposition, as heritability research suggests that identical twin and parent/child dyads have a 48% and 13% likelihood of sharing a diagnosis, respectively (Gottesman, 1991). The onset of a first episode may then be triggered, or worsened, by environmental stressors that are perceived threats to one’s well-being (Jones & Fernyhough, 2007). These threats to homeostasis may include traumatic events (e.g., observed or experienced instances of abuse or disaster) or major life adjustments (e.g., immigration and possible subsequent discrimination), as those with psychosis report experiencing significantly more stressful events than those without (Norman & Malla, 1993).

Considering the negative effects of psychosis and its complex etiology, early detection of symptoms is critical to understanding illness development. The psychosis state is often preceded by a sub-threshold form of positive symptoms, referred to in the North American literature as clinical high risk (CHR), and is characterized by more attenuated symptoms that are not marked by the degree of frequency, interference/distress, or progression of illness that characterizes diagnosable psychosis (Jackson, McGorry, & Dudgeon 1995; McGorry, Yung, & Phillips, 2003). Understanding the CHR phase is particularly important considering that approximately 26% of those meeting criteria for CHR will go on to develop psychosis within two years (Fusar-Poli et al., 2015). This link between risk and subsequent psychosis makes the CHR phase of illness important to early detection efforts, however, assessments borne out of the CHR

literature have generally gone unused as a measure to detect psychosis onset or the amount of time that one goes untreated.

First episode psychosis. The designation of prevention and early intervention in psychosis as a high priority within the field (McGorry, Killackey, & Yung, 2008) has led to a more comprehensive understanding of consumers' (i.e., help-seekers who have successfully begun treatment) experiences regarding first episode psychosis, as well as pathways into treatment services. As a result, increased attention on consumers whose symptoms meet criteria for full-threshold psychosis has prompted researchers to specifically investigate 1) which markers are predictive of poorer outcomes and 2) what can be done with this information to mitigate the negative effects of psychosis. This has led to investigation of an emerging construct in psychosis research known as the "duration of untreated psychosis" (DUP). DUP research has utilized various measures to determine psychosis onset and subsequent admission into treatment, with findings suggesting that minimizing DUP often leads to improved outcomes (Marshall et al., 2005).

Duration of untreated psychosis. DUP has been a construct of interest for researchers across various domains, including neuroimaging (Lappin et al., 2006; Malla, Bodnar, Joober, & Lepage, 2011; van Erp et al., 2016), electrophysiology (Nagai et al., 2013), and pharmacological intervention (Altamura, Buoli, & Serati, 2011). Clinically, DUP research has suggested that negative clinical impacts of illness are significantly reduced when symptoms are identified early in the course of illness and treatment initiated as early as possible (Penttilä, Jääskeläinen, Hirvonen, Isohanni, & Miettunen, 2014). This "critical period" hypothesis suggests that reductions in social and role

functioning, as well as exacerbation of positive and negative symptoms, are likely to occur when appropriate treatment is not pursued in the first 2-3 years of psychosis onset (Birchwood, Todd, & Jackson, 1998).

Negative effects of prolonged DUP. Despite variability in how psychosis and treatment are operationally defined, research has generally shown that lower DUP is associated with fewer losses in occupational functioning, reduced hospitalizations, and better clinical outcomes (Kane et al., 2016; Marshall et al., 2005; Penttilä et al., 2014). In a nation-wide study of 404 outpatient participants, DUP was found to be associated with positive symptom levels at intake, suggesting that this severity may continue to increase until treatment is initiated (Addington et al., 2015). These trends have been sustained in individual symptom domains, with DUP being associated with intensity of positive symptoms individually (i.e., hallucinations, delusions, and disorganized behavior; Birnbaum, Wan, Broussard, & Compton, 2015), as well as severity of negative symptoms at treatment baseline (Boonstra et al. 2012). Prolonged DUP has also been linked to decline in areas of social functioning, including increased social isolation (Drake, Haley, Akhtar, & Lewis, 2000) and breakdown of social support systems (Gayer-Anderson & Morgan, 2013). The most robust study of DUP and early psychosis intervention stems from a 34-site randomized clinical trial that compared a specialized first episode program model to non-specialized community treatment (Kane et al., 2015). The authors found significantly greater improvements in symptomatology and quality of life in those who had shorter DUPs and were receiving specialized care, highlighting the importance of swift intervention.

In addition to cross-sectional assessment of DUP and outcome measures at treatment baseline, longitudinal measurement of symptoms has also informed the trajectory of symptom development as it pertains to early intervention and reduced DUP. Research using both a baseline and 1-year follow-up has found more pronounced improvements in positive symptoms (Barnes et al., 2008; Gumley et al., 2014; Larsen, Moe, Vibe-Hansen, & Johannessen, 2000; Sullivan et al., 2018) and negative symptoms (Boonstra et al., 2012; de Haan, Van der Gaag, & Wolthaus, 2000; Elsheshtawy & Hussein, 2015; Tabo et al., 2017) among those with shorter DUP. Long-term follow-up studies have confirmed that longer DUP is still associated with positive symptomatology at 10-year follow-up (Austin et al., 2015) and positive, negative, and general psychopathological symptoms at 15 years (Bottlender et al., 2003). These findings underscore the importance of assessing DUP as a risk factor for increased symptom severity and decreased functioning, and specifically how these effects may be sustained over time. Research on psychosis intervention has demonstrated across several studies that early treatment can mitigate some of these effects, however, a more standardized and specific method of measuring onset and DUP may help to better compare findings across samples of people with emerging psychosis.

Barriers to treatment engagement within DUP. Several factors at the illness level may contribute to longer DUP, including a lack of insight (Compton, Goulding, Gordon, Weiss, & Kaslow 2009; Cuesta, Peralta, Campos, & Garcia-Jalon, 2011) and misattribution of psychotic symptoms (e.g., spirits or demons; Bourgou, Halayem, & Hayalem, 2012; Chilale, Silungwe, Gondwe, & Masulani-Mwale, 2017). Because lack of insight is itself a symptom of psychosis, those experiencing this illness may not

acknowledge the need for mental health services, thereby increasing DUP and potentially isolating friends or family that could help with treatment-seeking. Alternatively, this delay may also be *enabled* by friends or family who attribute symptoms to factors such as personality traits or coinciding life stressors that are believed to account for the psychotic symptoms (Tanskanen et al., 2011). For example, if the symptoms are seen only as an exacerbation of their typical characteristics (e.g., a normally "shy" adolescent developing negative symptoms), then those involved in the person's care may not be sensitive to the underlying psychopathology (Compton et al., 2015).

Difficulty in detecting psychosis is further complicated by its relatively low base rate of occurrence and high likelihood of psychiatric comorbidity. Considering that over 90% of consumers with a first episode report depression as a precipitant to their psychosis (NICE, 2014), it may initially be overlooked by providers. Research has also found that as those presenting with affective psychosis (i.e., psychosis associated with a significant mood component) have a significantly shorter DUP than those with non-affective (Large, Nielssen, Slade, & Harris, 2008). If help-seeking is more likely to occur when other presenting concerns exist, this may suggest that: 1) consumers may feel a stronger stigma around seeking help for psychosis relative to other psychiatric conditions, 2) psychosis-only symptoms may be misattributed to other phenomena (e.g., hallucinations due to suspected substance use, disorganized behavior due to impulsivity in young adulthood, etc.), and/or 3) the lack of insight stemming from psychosis might delay care. Internalized self-stigma may enable the person to accept negative and stereotyped attitudes about psychosis, which reduce feelings of self-empowerment (Brohan, Elgie, Sartorius, & Thornicroft, 2010) and perpetuate a cycle of delaying

treatment (Strkalj Ivezić, Sesar, & Mužinić, 2017). While many of these barriers will require efforts around de-stigmatization and mental health education, improvement upon clinical DUP measures may help to identify people earlier in the course of illness.

Operational Definition(s) of DUP

An accurate measure of DUP is reliant upon precise and accurate measures of two dates: 1) psychosis onset, and 2) treatment of psychosis. The field has approached evaluating these two dates in a variety of ways. This variability, as well as limitations inherent within the various approaches to assessing DUP, creates issues with respect to accurate and reliable evaluation of the DUP construct within and across studies. In subsequent consideration, all references to DUP will denote the amount of elapsed time between the two onset dates; psychosis to treatment. Predictably, differences in DUP arise with respect to definitions of either, or both, of those two dates.

Assessing onset of illness. Although DUP itself has been investigated at length, the methodology in how these data are collected has varied, making comparisons across studies difficult and calling into question the relative validity of different methods of DUP evaluation (Addington, Van Mastrigt, & Addington, 2004; Esterberg & Compton, 2012; Jeppesen et al., 2008). Date of psychosis onset has been defined through a number of strategies including chart reviews (Altamura et al., 2015), unstructured qualitative interviews (de Haan, Linszen, Lenior, De Win, & Gorsira, 2003), and longer psychosis-specific interviews (Cuesta et al., 2012). A meta-analysis reporting on the most commonly used methods of eliciting DUP found that, out of 94 research groups reporting DUP, twelve different measures for psychosis onset (i.e., clinical interviews, chart reviews, and nine psychosis onset-specific measures published in English [one psychosis

onset-specific measure not published in English is excluded in the current review]) were used (Register-Brown & Hong, 2014).

Chart reviews. The use of chart review in documenting psychosis onset allows researchers to understand the participant's experience as it happened in real time (at least as well as it was documented) via historical providers. Chart review assessments of DUP allow for the collection of large, comprehensive samples of participants across a variety of settings, including those who may not have matriculated into any psychosis-specific treatment. Conversely, such documentation is not necessarily designed for research and should be interpreted cautiously if used to make inferences about the progression of illness. Onset calculated from clinical records carries with it a lack of standardization, considering it may be based only on available records and is subject to clinical rater biases in what the provider might interpret as psychosis threshold.

Diagnostic interviews. General diagnostic interviews have also been employed to evaluate psychosis onset. These interviews provide probes to quickly assess the presence of many diagnoses and generally do not require training in psychosis detection, allowing access for a wider range of clinicians to collect information about psychosis onset. Despite the structured nature of this approach, however, most of these tools were not designed with the intent of establishing DUP. The Structured Clinical Interview for DSM-5 (SCID-5; First, Williams, Karg, & Spitzer, 2015), for instance, assesses symptoms' presence dichotomously without providing nuanced measures of when symptoms truly cross over from sub-threshold to threshold. Focusing primarily on overarching diagnoses, specific attention may not be given to the frequency, impairment,

and conviction needed to assess symptoms of psychosis, reducing the precision of psychosis onset identification.

Illness onset-specific measurement tools and DUP. Several assessments have been designed to specifically document the date of psychosis onset as either a primary or secondary goal. These include The Royal Park Multidiagnostic Instrument (RPMIP; McGorry, Copolov, & Singh, 1990), the Beiser Scale (Beiser & Erickson., 1993), the Comprehensive Assessment of Symptoms and History (CASH; Andreasen, 1992), the Circumstances of Onset of Symptoms and Relapse Schedule (CORS; Norman, Malla, Verdi, Hassall, & Fazekas, 2004), the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987), the Interview for the Retrospective Assessment of Onset Schedule (IRAOS; Häfner et al., 1992), the Symptom Onset in Schizophrenia (SOS; Perkins et al., 2000), and the Personal and Psychiatric History Schedule (PPHS; Jablensky et al., 1992). These measures vary in their administration length, interview style, definition of onset, interviewee, reliability, validity and frequency of use, but all incorporate a measure of psychosis onset. While use of these measures has contributed to the field's understanding of DUP, all suffer from limitations. Table 1 includes data on reliability, number of studies used, and predictive validity for several of the most commonly used psychosis onset assessments for measuring DUP, which were taken from a recent review on variability in DUP measures (Register-Brown & Hong, 2014). This table was based on information from that review and is expanded to include information on how symptoms are queried, definitions of onset, and the type of respondent used.

Despite these measures' ability to assess DUP, several key limitations exist. All struggle with variations in one or more of the following features: 1) how information

Table 1.

Descriptions of Administration, Reported Interrater Reliabilities, Number of Studies Included in Meta-Analysis, and DUP's Predictive Validity of Symptoms, Per Measure.

				Reliability estimates			Predictive validity	
Instrument	**Duration**	**Respondent**	**Studies**	**DUP**	**Sx**	**Tx**	**Positive**	**Negative**
Royal Park Multidiagnostic Instrument for Psychosis (RPMIP; McGorry, Copolov, & Singh, 1990)	*Method: Dichotomous probes used to determine presence/non-presence of symptoms.* *Psychosis Onset: Emergence of the first sustained psychotic symptom at threshold level.*							
	4-7 hrs	Subject	6	$\kappa = 0.79$	$\kappa = 0.79$	NI	0.31**	0.29**
Beiser Scale (Beiser & Erickson., 1993)	*Method: Open-ended interview questions.* *Psychosis Onset: Following interview, content analysis used to determine date of first symptom presence via standardized checklist.*							
	0.5 hrs	Subject, peer, or family member	11	CC = 0.79-0.98	ICC = 0.94-0.98	ICC = 0.95	0.28**	0.33**
Comprehensive Assessment of Symptoms and History (CASH; Andreasen, 1992)	*Method: Dichotomous probes used to determine presence/non-presence of symptoms.* *Psychosis Onset: Date at which conviction of positive symptom is "firmly held."*							
	2 hrs	Subject	4	CC = 0.87-1.00	ICC = 0.96	ICC = 0.96-1.00	0.12	0.02
Circumstances of Onset of Symptoms and Relapse Schedule (CORS; Norman et al., 2004)	*Method: Dichotomous probes used to determine presence/non-presence of symptoms.* *Psychosis Onset: Date when the patient first experienced symptoms of psychosis (hallucinations, delusions and/or grossly disorganized behavior or thinking) that had duration of at least 1 week.*							
	1.5 hrs	Subject	7	ICC = 0.71-0.98	NI	NI	0.22**	0.18*
Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987)	*Method: Semi-structured interview that uses open-ended questions to determine symptom presence. Symptoms are then rated along continuum of intensity.* *Psychosis Onset: Date when positive symptoms become marked manifestations that distinctly impact functioning.*							
	0.5 hrs	Subject	18	ICC = 0.9-0.99	NI	NI	0.11	0.20*

Table 1 (cont.)

				Reliability estimates			Predictive validity	
Instrument	**Duration**	**Respondent**	**Studies**	**DUP**	**Sx**	**Tx**	**Positive**	**Negative**
Interview for the Retrospective Assessment of Onset Schedule (Häfner et al., 1992)	*Method: Dichotomous probes used to determine presence/non-presence of symptoms. Psychosis Onset: Date when there began to be a clear increase in symptom intensity, where the symptoms led to a clear change in behavior, with associated changes in the patient's experience and/or social competence.*							
	1.5 – 2 hrs	Subject, peer, or family member	11	κ = 0.6-0.95	PA = 77%	PA = 80-100%	0.15*	0.10*
Symptom Onset in Schizophrenia (SOS; Perkins et al., 2000).	*Method: Dichotomous probes used to determine presence/non-presence of symptoms. Psychosis Onset: Date when symptoms cross predetermined frequency threshold.*							
	0.5 hrs	Subject	7	ICC = 0.99	ICC = 1.0	NI	NI	0.27**
Psychiatric and Personal History (PPHS; Jablensky et al., 1992)	*Method: Dichotomous probes used to determine presence/non-presence of symptoms. Psychosis Onset: Date when patient first experienced symptom.*							
	0.5 – 1 hrs	Subject, peer, or family member	4	ICC = 0.90	NI	NI	NI	NI

about symptoms is probed, 2) the operational definition of psychosis onset, and 3) the field definition (or lack thereof) of treatment onset.

Symptom probing. Some psychosis-specific (IRAOS; Häfner et al., 1992; RPMIP; McGorry, Copolov, & Singh, 1990; PPHS; Jablensky et al., 1992) and general (SCID; First et al., 2015) clinical interviews that assess psychosis onset use dichotomous approaches for symptom presence (i.e., present or not present). This approach helps to quickly outline a consumer's presenting symptoms, but may not be nuanced enough to distinguish subthreshold from threshold psychosis, and may therefore lead to an imprecise determination of onset. As people may have experienced psychotic-like symptoms without meeting diagnostic criteria, a more continuous approach may help in improving overall accuracy, and in particular, reduce false positives. For example, the RPMIP assessment of persecutory delusions inquires whether "anybody has been giving [the participant] a hard time or trying to hurt [them]" or "accusing [them] of things," but does not include any follow-up inquiries that would help determine whether these symptoms meet criteria for subthreshold (e.g., occurring infrequently with occasional conviction) or threshold psychosis (e.g., functionally impairing, frequent, and held with significant conviction). Pinpointing psychosis onset with the RPMIP would rely more heavily on the clinical judgment of the interviewer, which may vary based on personal interpretation and training background, than if probing were facilitated with more nuanced prompts and gradations of symptoms. This cursory approach may sacrifice some standardization in the assessment of psychosis or risk status.

A second concern in some measures is the reliance on qualitative content. The Beiser Scale (Beiser & Erickson., 1993), which is among the more frequently used

psychosis onset measures, provides open-ended questions to consumers or family members to develop a narrative about the onset of psychotic illness. Using these qualitative narratives, raters then review the content to pinpoint a date of psychosis onset. Although this does allow the participant to recount their first episode in their own words, it also sacrifices standardization. Because this interview does not include structured, psychosis-specific probes, much of the information needed to determine onset depends on the amount and quality of information volunteered by the interviewee, which may increase the risk of omitting important information. Similarly, the PANSS (Kay et al., 1987) and the CORS (Norman et al., 2004) are also semi-structured interviews that use open-ended questions to determine symptom presence. The tone of the PANSS is intended to be more conversational than a direct assessment of clinical functioning, and requires the administrator to code the open-ended responses on a Likert-type scale of severity after the conclusion of the interview. Because these questions lack specific follow-up to clarify or quantify an interviewee's response, specifying frequency or severity may be difficult, and threaten reliability and validity.

Psychosis onset. The definition of psychosis onset also varies across measures and may be overly ambiguous for accurate ratings on both Likert-type and dichotomous ratings of symptoms in the absence of additional symptom specifiers. For example, symptoms on the PANSS are rated along a 7-point Likert-type scale, where anchors suggest that symptoms rated a 4 (i.e., "only occasionally or intruding on daily life only to a moderate extent") or lower are considered clinical-high risk (CHR), while symptoms at a 5 (i.e., "marked manifestations that distinctly impact one's functioning") or higher are considered to meet psychosis threshold. These anchors do not include quantifiable

specifiers (e.g., a specified amount of time during the day that hallucinations occur, the degree to which delusions are believed, etc.), which may lead to reduced standardization for follow-up questions and scoring.

Another concern in these measures is the inconsistent and selective use of symptom duration and impairment in determining psychosis presence, which may inappropriately label those who are not in need of services. For example, consumers who experience regular positive symptoms, but are otherwise well-adjusted in their level of quality of life and functioning, may be inaccurately given a psychosis diagnosis according to some measures. This approach can be seen in the CORS measure, which requires that any positive symptom be occurring for one week or more to meet onset criteria, regardless of whether it is functionally impairing or not. Similarly, the determination of psychosis presence in the SOS also relies solely on frequency, which is further complicated by the fact the required duration depends on the type of symptom. For example, “ideas of reference” that are considered “sporadic” (i.e., “has had the symptom at least once but less than five times, or did not have the symptoms occur at least twice within a 1-month period”) meet criteria for psychosis, whereas a higher “recurrent” frequency (i.e., “has had the symptom throughout the day for many days and the symptoms have lasted for at least 1 month”) is required for the “suspiciousness” scale. Neither measure assesses for a specific degree of impact on functioning, which is traditionally required for an axis I diagnosis. Applying a label to those not impacted by their psychiatric experiences may be stigmatizing. Moreover, the ambiguity in how frequency is operationalized (e.g., “only occasionally,” “many days”) may also reduce reliability across raters.

Additionally, psychosis determined by dichotomous probes found in the Beiser Scale (Beiser & Erickson., 1993), the RPMIP (McGorry, Copolov, & Singh, 1990), and the IRAOS (Häfner et al., 1992) is also limiting. The Beiser Scale uses a checklist of symptoms to assess unstructured interview reports, eliciting dates of onset based on interview content. This method allows consumers to recall their experiences in their own words, which can be helpful for those who have difficulty with clinical terminology, but again heavily depends on the interviewee's recall. The RPMIP also uses a checklist of symptoms' presence/non-presence, requesting "start" dates for each symptom endorsed, a relatively insensitive approach. Additionally, creators of the RPMIP explain that its use was primarily intended for inpatient use and community providers. Thus, evidence for the RPIMP in non-inpatient settings is lacking, and the authors themselves note that its generalizability to the community is uncertain (McGorry, Copolov, & Singh, 1990). The IRAOS also uses a dichotomous approach in its probing but does require that endorsed symptoms be associated with behavioral changes or a reduction in functioning or social connectedness/competence. It does not describe what this reduction might look like or provide a quantification of how to measure it, relying on the administrator to make that determination informally.

Assessing onset of treatment. Similar to the *illness onset* criticisms outlined above, there is not a gold standard in DUP research as to what constitutes *treatment onset*. Several meta-analyses assessing the impact of DUP on outcomes have noted a range of definitions for treatment onset including: 1) initiation of first treatment (Addington et al., 2004) or admission into psychosis-specific program (Amminger, 2002); 2) initiation of first antipsychotic (Black et al., 2001; Ho et al., 2003); or 3) first

hospitalization (Craig et al., 2000; Crow, MacMillan, Johnson, & Johnstone, 1986; Haas & Sweeny, 1992), each of which can complicate research assessment for several reasons.

Initiation of first treatment or admission into a general or psychosis-specific mental health program does not guarantee a therapeutic effect, as it is largely reliant on the level of engagement by the consumer. Similarly, the use of "initiation of an antipsychotic" as a measure of treatment may include those who will terminate treatment before experiencing therapeutic effects of the medication, which can take as long as six weeks to impact symptoms (Lally & MacCabe, 2015). Therefore, it is possible that those taking medication for an insufficient amount of time may follow the same symptomatic trends as those who are continuously unmedicated. Finally, like the aforementioned treatment modalities, involuntary hospitalization may help to stabilize consumers experiencing a first episode of psychosis, but may not serve as adequate treatment. In fact, involuntary hospitalizations may have iatrogenic long-term effects related to psychopathology and functioning as compared to voluntary hospitalization (Opjordsmoen et al., 2010).

Currently available assessments vary in their degree of specifying treatment onset. Despite being two of the more frequently used assessments for measuring DUP, the PANSS interview and SOS have been designed only as symptom ratings (used for psychosis onset), which has required research groups to supplement the interviews with customized definitions of treatment onset. These have included the first noticeable clinical response to medication (Larsen et al., 2000), first hospitalization (Compton et al., 2011; Flanagan & Compton, 2012), or one month of adequate antipsychotic dosage (Winsper et al., 2013), which complicates the comparison of efforts for measuring DUP

across samples. Similarly, many of the groups using the RPMIP do not document their methods for assessing treatment onset (Alvarez-Jimenez et al., 2012; Harrington, Neffgen, Sasalu, Sehgal, & Woolley, 2013), suggesting variability in this interview's definition of DUP.

For those assessments that explicitly probe for treatment onset in their original forms, there still exists some lack in the quality of information provided. Similar to its assessment of symptom onset, the Beiser Scale uses content analysis of open-ended questions to determine the date of when treatment was first sought, but does not probe any further about the course of treatment. This has led Beiser Scale research groups to formulate their own methods of determining treatment onset, which have included first antipsychotic treatment (Clarke et al., 2006; Foley et al., 2007; Hill et al., 2010) and first hospitalization (Verdoux et al., 2001). The CORS is more operationalized than other measures, labelling treatment as "receiving antipsychotic medication that would lead, in most cases, to a clinically sufficient response in non-chronic, non-treatment-resistant people" (Norman et al., 2004). Despite this guidance, this definition may still create an unclear judgment call for non-prescribers. The CASH, like other global diagnostic interviews, inquires more broadly about whether or not the interviewee is currently, or has ever been, prescribed an antipsychotic. Follow-up probes assess the number of total months they may have been prescribed, but do not specify either the date of first administration or if it was taken continuously. As a result, several of the studies reviewed used the "initiation" of an antipsychotic as the onset of treatment, which may not accurately capture the date of therapeutic response.

Development of a New DUP Measure

Limitations in current measures of DUP include overreliance on chart reviews, dichotomous probing of complex symptoms, loose definitions of frequency or duration criteria, and inattention to duration and functional impairment interplay. The standardization of a DUP measure is further complicated by the fact that many current measures do not include a tool to document any form of treatment onset, requiring that interviews incorporate their own treatment onset measure to elicit a DUP. An improved measure would provide: 1) a sensitive symptom assessment with a continuum of severity and frequency and 2) an easily measured and generally accepted metric for treatment onset, which would aid in the standardization of DUP.

Structured Interview for Psychosis-Risk Syndromes (SIPS). One measure that may have potential to contribute to a standardized definition of illness onset is the Structured Interview for Psychosis-Risk Syndromes (SIPS; Miller et al., 2003). Unlike traditional psychosis-onset measures, the SIPS stems from research measuring a continuum of symptom severity in those at risk for, or experiencing, psychotic symptoms. The SIPS was designed to measure the level of conviction, frequency, and functional impairment of symptoms, many of which are lacking in the majority of measures in the DUP literature. Moreover, the SIPS is better able to probe at the lower end of symptom expression than other psychosis-focused measures and can comprehensively assess for symptoms along a continuum of psychosis-risk. It is also the most commonly used measure of psychosis risk in North America (Goulding et al., 2013).

The SIPS uses a detailed list of probes to detect the presence of positive symptoms, which includes 21 items assessing unusual thoughts and delusional ideas, 5

items assessing suspiciousness/persecutory ideas, 5 items assessing grandiose ideas, 14 items assessing perceptual abnormalities, and 3 items assessing disorganized communication. After the presenting symptoms are established, follow-up probes are used to determine if these symptoms meet criteria for a CHR syndrome or full-threshold psychosis. The most common CHR diagnosis is "attenuated psychosis syndrome" (APS), where a consumer endorses regular experiencing of positive symptoms, but with a level of conviction or impact to functioning that scores below the diagnostic threshold for psychosis (Tsuang et al., 2013). Alternatively, a diagnosis of "Brief Intermittent Psychotic Syndrome (BIPS)" suggests that the severity of symptoms would meet criteria for psychosis, but are too brief and not dangerous or disorganizing enough to meet the frequency threshold. Finally, the SIPS also has a third categorization that focuses on psychosis-risk syndromes in those with genetic risk and who have experienced a decline in global functioning. This "Lifetime Genetic Risk and Functional Decline" (GRD) syndrome specifically includes those with a reported 30% or greater reduction in global functioning and have either: 1) a first degree relative with a psychotic disorder or 2) meet criteria for Schizotypal Personality Disorder (SPD). The SIPS is designed to detect these three different manifestations of CHR. Importantly, in addition to assessing these three risk syndromes, the SIPS is also designed to measure the onset of psychosis.

To meet criteria for psychosis, the SIPS requires that positive symptoms are held with conviction (belief that the symptom is real [with no doubt] at least intermittently) and interfere with thinking, feeling, social relations, and/or behavior. In addition, symptoms must also be disorganizing (posing a threat to one's reputation, e.g., wearing foil on head), dangerous (e.g., jumping in front of traffic), or frequent (i.e., occurring at

least 1 hour/day at an average frequency of 4 days/week over 1 month). These combined criteria ensure that the diagnostic process excludes consumers that may have experienced prolonged symptoms but are not severely affected, or have experienced an acute occurrence of psychosis symptoms that could potentially remit without intervention. Unlike other measures' diagnosis for psychosis, the SIPS criteria closely reflect criteria set forth by the DSM, making it an ideal candidate for measuring DUP.

SIPS-DUP Interview. The SIPS holds important advantages in the evaluation of psychosis onset (a necessary component to establish DUP), including its comprehensiveness with respect to possible psychosis symptoms, attention to the full psychosis spectrum on a continuous scale, sensitivity to subtle changes in illness that mark early expression of psychosis (e.g., severity, frequency, interference, distress, conviction), a highly standardized administration format, and inclusion of a working definition of psychosis reflective of that in the DSM. However, the SIPS' length and lack of treatment onset measurement prevents it from efficiently and comprehensively measuring DUP in its original form.

With these strengths in mind, a modified "SIPS-DUP Interview" was designed by our team to maintain the benefits inherent to the SIPS (i.e., documentation of psychosis onset, use of multiple probes to assess individual symptoms, continuous measurement to distinguish psychosis from CHR symptoms, ability to probe at the lower end of symptom expression, and a structured interview format to ensure standardization and reliability), while also improving the measurement of DUP relative to existing options. To do this, the SIPS-DUP was modified to conclude with a "DUP Interview" portion that uses clinical interview probes to ascertain dates that specific symptom indicators may have

occurred, including first observance of a symptom's presence by another person, first ER/hospitalization, and first time seen by mental health care provider for symptoms of psychosis. Next, the SIPS-DUP Interview documents five markers of treatment onset date, including first dose of antipsychotics, first completed course of antipsychotics for 1 month or more, first visit for mental health issues, first non-medication treatment, and first non-antipsychotic but psychotropic medication. These modifications are intended to address the limitations documented in the existing DUP measurement strategies.

Present Study

Although the association between DUP and clinical outcomes has been well-established using a variety of assessments, there is reason to believe that use of the SIPS-DUP Interview may help correct for some shortcomings inherent in these measures. The ability for the SIPS-DUP to sensitively measure change from the prodromal to full psychosis phase of illness, use multiple probes to thoroughly assess symptoms, and deliver a structured and reliable interview may help the field better understand which components of illness are most affected by DUP. Additionally, given the value of early detection in the risk stage of illness to help minimize DUP, using a measure with roots in identifying early signs prospectively, versus a tool designed to assess existing psychosis, may help facilitate links between systems of care that serve those at risk with aspects of systems of care that serve people in their first episode of psychosis.

The current study aimed to measure the ability of the SIPS-DUP Interview to predict the clinical impact of longer DUP in overall positive and negative symptom scores, while also exploring what effect DUP may have at the symptom level. Unlike

many studies measuring participants at treatment baseline, however, this study enrolled young adults currently in treatment for 1-3 years following a first episode of psychosis.

Specific Aims and Hypotheses

Aim 1: Assess the relation between the SIPS-DUP Interview and positive symptoms**.** The first aim of this study was to assess the degree to which DUP, as measured by the SIPS-DUP Interview, was associated with positive symptomatology (e.g., strange beliefs, delusional thoughts, suspiciousness, grandiose ideas, hallucinatory experiences) of psychosis during treatment, as measured by total and individual scores on the Brief Psychiatric Rating Scale (BPRS).

***Hypothesis 1A*.** It was hypothesized that longer SIPS-DUP assessed DUP would be predictive of more severe overall positive symptomatology, as measured by BPRS total score.

Exploratory Hypothesis 1B. It was hypothesized that the degree to which SIPS-DUP assessed DUP would be positively associated with individual items on the BPRS would vary based on the item being assessed. Specifically, the correlations of SIPS-DUP assessed DUP with individual symptoms (i.e., items on the BPRS) were estimated to assess patterns of relations between specific symptoms and SIPS-DUP assessed DUP.

Aim 2: Explore the relation between the SIPS-DUP Interview and negative symptoms**.** The second aim of this study was to assess the degree to which DUP, as measured by the SIPS-DUP Interview, was associated with negative symptomatology (e.g., blunted affect, alogia, avolition, asociality) of psychosis during treatment, as measured by total and individual scores on the Scale for the Assessment of Negative Symptoms (SANS).

Hypothesis 2A. It was hypothesized that longer DUP would be predictive of more severe overall negative symptomatology, as measured by SANS total score.

Exploratory Hypothesis 2B. It was hypothesized that the degree to which SIPS-DUP assessed DUP was positively associated with individual items on the SANS would vary based on the item being assessed. Specifically, the correlations of SIPS-DUP assessed DUP with individual symptoms (i.e., items on the SANS) were estimated to examine patterns of relations between specific symptoms and SIPS-DUP assessed DUP.

Method

Participant Eligibility and Recruitment

The current study was part of an ongoing research collaboration between the University of Maryland, Baltimore's Department of Psychiatry and the University of Maryland, Baltimore County's Department of Psychology, which aims to track the clinical, neuropsychological, and neurological markers of participants between the ages of 12 and 45 who are within their first year of treatment at a first episode program in the Baltimore area. Consumers were invited to participate if they met the following requirements: had a reported history of hallucinations or delusions, were enrolled in clinical services, were considered clinically stable enough for research by their treating therapist, and could communicate well enough to effectively answer interview questions. Research staff coordinated recruitment with programs' clinical staff to ensure eligibility criteria were met, at which point study staff offered them the opportunity to participate in the research. All consumers meeting these criteria were offered the opportunity to participate in the study. The final sample was comprised of 27 participants in which the

average age was 22, identified gender was predominantly male (81%), and mean duration of untreated psychosis (DUP) was approximately 46 weeks.

Measures

Structured Interview of Prodromal Syndromes – Duration of Untreated Psychosis Interview (SIPS-DUP Interview).

The original Structured Interview for Psychosis-risk Syndromes (SIPS; Miller et al., 2003) is designed to measure the presence of 19 symptoms within four individual domains of the psychosis spectrum: positive, negative, disorganizing, and other general symptomatology. These 19 items are measured using a 7-point Likert-type scale, which ranges from 0 (“absent”) to 6 (“severe and psychotic” for positive symptoms, or “extreme” for negative, disorganized, and general symptoms). The positive symptom domain is used to determine psychosis presence where, if a symptom is endorsed, follow-up qualifiers are used to determine the frequency, distress level, degree of interference (e.g., behavioral, functional), and degree of conviction. A psychosis rating requires that the symptom be rated a 6, and meet either a frequency criterion (i.e., at least one hour per day at an average frequency of four days per week over one month) or a distress/interference criterion (i.e., symptom must be either seriously disorganizing or dangerous). Research on the SIPS interrater reliability (Miller et al., 2003) has revealed a rater agreement of 93% (kappa = 0.81, 95% CI = 0.55-0.93). In terms of ability to predict the eventual onset of psychosis, approximately 26% of those deemed CHR using the SIPS will cross the threshold for full psychosis in the first two years of illness onset (Fusar-Poli et al., 2015).

The SIPS-DUP Interview is a modified version of the SIPS interview that includes three major changes. The first modification was the use of only positive

symptom probes in the SIPS-DUP Interview; the original SIPS measures an array of positive, negative, disorganizing, and other general symptoms. The SIPS-DUP Interview's primary purpose in this study was to establish psychosis onset, eliminating the need for the assessment of non-positive symptoms. The second modification was the paring down of these positive symptom probes, where item-level analyses eliminated probes that were either 1) not a significant predictor of psychosis or 2) highly correlated with other items tapping into the same construct (i.e., "copycat" items), which resulted in a retention of 31 of the original 48 probes. The final and most notable change was the integration of a novel section that collected information on the date of first symptom to cross psychosis threshold and date of treatment for psychosis (described below).

The SIPS-DUP Interview was administered as a standardized, structured interview, where interviewees are first provided 31 positive symptom probes in a yes/no response format. For probes that are endorsed, follow-up inquiries are used to determine if a psychotic intensity is present. This includes the use of "anchor questions," which aim to bolster the participant's recall of when certain symptoms emerged (e.g., inquiring what season it was, what year in school something happened, or if it was around a particular holiday) when insight is limited. To determine psychotic presence, participants must endorse a specific degree of conviction (i.e., believing the symptom to be real at least intermittently) and interference (i.e., the symptom affecting one's thinking, feeling, social relations, or behavior) in their symptoms. If the symptoms meet these thresholds, further follow-up questions are administered to determine if these symptoms meet full criteria for psychosis. Full psychosis is reached when symptoms are either dangerous (e.g., physically dangerous toward life or physical health) or disorganizing (apparent and

impairing odd or bizarre behavior that impacts one's dignity or reputation); or occurring at a frequency of at least one hour per day over the course of at least four days per week, with this level of frequency occurring for at least one month.

The final portion of this measure is used to document DUP. To do so, the date of earliest full-threshold symptom is first identified from the probes to document exactly when psychosis began. Next, to determine the end of one's DUP, participants are asked when treatment was adequately obtained (defined in this study as 30 days of continuous antipsychotic treatment). DUP is therefore operationalized as the amount of time between 1) onset of earliest full-threshold symptoms and 2) the reception of adequate treatment.

Brief Psychiatric Rating Scale (BPRS). The BPRS is a 22-item clinician-administered semi-structured interview designed to assess the positive, negative, and affective symptoms of psychosis (Overall & Gorham, 1962). The BPRS measures the frequency and severity of symptoms over the past week using a 7-point Likert-type scale with anchors ranging from 1 ("not present") to 7 ("extremely severe"). It is composed of questions based on content (e.g., reported depression, anxiety, anhedonia) and observable symptoms (e.g., blunted affect, poverty of speech). This measure has established satisfactory sensitivity in its ability to detect changes in symptom severity (Faustman & Overall, 1999), and reports of reliability have demonstrated moderate inter-rater reliability ranging from .66 to .88 (Ventura, Green, Shaner, & Liberman, 1993). Concurrent validity of the BPRS has been established through comparison of other measures, including the Hamilton Rating Scale for Depression (r = .79; Craig, Richardson, Pass, & Bregman, 1985), Scale for the Assessment of Negative Symptoms

(*r* = .85; Gur et al., 1991), and the Brief Symptoms Inventory (*r* = .56; Morlan & Tan, 1998).

Scale for the Assessment of Negative Symptoms (SANS). The SANS is a 23-item clinician-administered semi-structured interview designed to assess only the negative symptoms of psychosis (Andreasen, 1989). It consists of five domains: Affective Flattening or Blunting, Alogia, Avolition-Apathy, Anhedonia-Asociality, and Attentional Impairment. Included in the total SANS score are both individual items scores and global scores for each of the five domains. In this study, the SANS was used to assess the frequency and severity of negative symptoms over the prior week. Each item measures symptoms on a 6-point Likert-type scale ranging from 0 ("not present") to 5 ("present and severe"). Interrater reliability of the SANS has ranged from moderate to high (ICC = 0.60 – 0.84; Andreasen, 2008). Interrater reliability improves within each of the domains (0.86 – 0.93), with reliability of the overall score being very good (0.92; Andreasen, 2008). Test-retest reliability of the SANS total score has been measured at 0.45, while the measures of individual domains have ranged from 0.13 – 0.40 (Andreasen, 2008). Internal consistency of the SANS within individual domains has also demonstrated satisfactory reliability (Cronbach α = Alogia, 0.63; Affective Flattening, 0.83; Avolition-Apathy, 0.74; Anhedonia-Asociality, 0.77; Attention, 0.75; Andreasen, 2008).

Duration of Treatment. The duration of treatment was defined as the total number of days between the participant's date of admission into their first episode psychosis program and the date of their being administered the outcome measures. These dates were taken from their medical record and research record, respectively.

Procedures

Consumers who chose to participate in the study were brought to a university research center to provide informed consent, which included an "evaluation to sign consent" to ensure full understanding of research procedures. For minors, this process consisted of providing assent to research while the corresponding guardian provides informed consent. Participants, or their guardians, also completed a HIPAA authorization form to allow research staff to review relevant medical records from participants' respective first episode programs. These medical record reviews were used to assess participants' duration of treatment. Following the informed consent process, participants were administered the study battery of clinical assessments and surveys, which included the BPRS, SANS, and SIPS-DUP Interview. The current project was begun with an initial recruitment target of 55 participants. Due to challenges in recruiting, this target was not met and a significantly smaller sample of 27 participants was used for analyses.

Results

Data Analysis Plan

Given the small sample size of 27 participants, reliance on traditional null hypothesis significance testing (e.g., inferring relations given $p < .05$) may be misleading and not reveal meaningful findings. For example, given the sample size, correlation statistics smaller than .39 (considered a "large" effect size; Cohen, 1988) would have *p*-levels greater than .05, resulting in a decision to retain the null. As such, statistical inferences in this study were based on effect size, where any correlation or partial correlation that was at least .27 (ignoring sign) was interpreted as a meaningful effect.

This threshold approaches a “medium” strength association, as coefficients of .10, .30, and .50 represent small, medium, and large magnitudes, respectively (Cohen, 1988).

Because the variations in duration of treatment (DT) and age of participants may conflate the relation of DUP with the outcomes, both variables were controlled for in the study. DT was calculated by totaling the amount of time, in weeks, between the beginning of treatment and the administration of outcome measures. Controlling for DT helped to evaluate the SIPS-DUP assessed DUP impact on outcomes while controlling for extended periods of time between the initiation of treatment and the administration of the SIPS-DUP measure.

Hypotheses 1A and 2A assessed whether previous findings associating DUP with positive and negative symptomatology would be replicable using the SIPS-DUP Interview. These hypotheses were tested through use of partial correlations, assessing the degree of association between DUP and positive and negative symptomatology, as measured by BPRS and SANS total scores, while controlling for age and duration of treatment (i.e., time between enrolling into treatment and administration of research measures). Hypotheses 1B and 2B were also explored through estimation of the partial correlations of DUP with BPRS item scores and SANS item scores, controlling for duration of treatment and age.

Preliminary Analyses

Demographics

The study included 27 participants who consented. The sample was comprised of 12 Black participants (44%), 13 White participants (48%) and two Asian-American

participants (7%) of which 5 (18%) identified as female and 22 (81%) male, and were approximately 22 years old (*SD* = 3.18).

Assumptions

Correlation and partial correlation analyses require that specific criteria are met to ensure that the sample is appropriate for analysis. These criteria include that there is a linear relation between predictor and outcome, that there are no appreciable outliers, and the variables approximate a normal distribution. Prior to conducting primary analyses, variable distributions were examined for consistency with these assumptions.

Measures of normality for predictor (DUP, duration of treatment, and age) and outcome variables (BPRS total scores, BPRS individual items, SANS total scores, and SANS individual items) were evaluated. Variables with skewness > | 2 | and/or kurtosis > | 7 | were considered moderately or severely non-normally distributed (Curran, West, & Finch, 1996). Ten variables exceeded these suggested guidelines and were transformed using natural log. Of these transformed variables, only DUP, BPRS Grandiosity, and BPRS Poverty of Speech appeared normally distributed following transformation. Seven variables, BPRS Conceptual Disorganization, BPRS Mannerisms, BPRS Uncooperativeness, BPRS Excitement, BPRS Disorientation, BPRS Inappropriate Affect, and SANS Blocking, continued to exceed guidelines following transformation and were not included in any remaining analyses.

Primary Analyses

Hypothesis 1

Partial correlations were estimated to determine the relation of DUP with the BPRS total score and individual items while controlling for age and duration of

treatment. Table 2 provides both the zero-order (non-controlled) and partial correlations between DUP and the 15 BPRS items.

Table 2.

Zero-Order and Partial Correlations Between DUP and BPRS Item Scores

	Covariates		DUP		
BPRS Items	Age	$BPRS_{DT}$	Zero-order	Partial	*p*
Total Score	-.02	-.05	.49	.51	.009
Conceptually grouped as positive symptoms					
Unusual Thought Content	-.12	-.13	.52	.57	.003
Suspiciousness	.10	.06	.51	.53	.007
Hallucinations	-.05	-.12	.47	.49	.013
Grandiosity	-.18	.16	.27	.37	.072
Guilt	.02	.41	.24	.36	.078
Conceptually grouped as psychomotor flattening					
Tension	-.22	.17	-.45	-.40	.048
Motor Retardation	.03	-.20	.34	.23	.279
Poverty of Speech	-.26	-.09	-.23	-.19	.351
Blunted Affect	-.02	-.09	.03	.02	.934
Conceptually grouped as general psychopathology					
Anxiety	.18	-.02	.48	.46	.021
Hostility	.12	-.16	.46	.43	.030
Depressiveness	.10	-.22	.34	.29	.153
Emotional Withdrawal	.34	.11	-.15	-.24	.244
Somatic Concern	.32	.09	.06	.00	.991

Within a given cluster, items ordered based on magnitude of partial correlation

As the covariates were not strongly related to DUP, the zero-order and partial correlations for a given variable are predictably quite similar. For ease in considering the relations, I conceptually grouped the BPRS items as falling into one of three categories: a) positive symptoms, b) psychomotor flattening, and c) general psychopathology. As can be seen from Table 2, all five of the positive symptom items and most (three of five) of the general psychopathology items were related to DUP. Moreover, most of the significant relations in each of these domains were typically in the moderate-strong to

strong range (> .40). Only one item (Tension) met traditional significance criterion in the psychomotor flattening category and unexpectedly, it was negatively related to DUP.

Hypothesis 2

Aim 2 sought to determine whether there were statistically significant associations between DUP SANS total scores and individual items via partial correlations. Table 3 displays the relations between DUP and the 17 SANS items.

Table 3.

Zero-order and Partial Correlations Between DUP and SANS Item Scores

	Covariates		DUP		
SANS Items	Age	$SANS_{DT}$	Zero-order	Partial	*p*
Total Score	.10	-.29	-.09	-.18	.381
Conceptually grouped as affective flattening or blunting					
Paucity of Expression	-.08	-.13	-.21	-.22	.288
Unchanging Facial Expression	.13	-.06	.21	.17	.408
Decreased Spontaneity	.12	-.18	-.08	-.15	.472
Lack of Vocal Inflections	.15	-.24	.12	.04	.832
Affective Non-Responsivity	.19	.05	.07	.03	.879
Poor Eye Contact	.19	.02	.07	.03	.877
Conceptually grouped as alogia					
Poverty of Speech	-.21	-.09	-.33	-.32	.124
Poverty of Content of Speech	.06	-.18	.35	.32	.113
Increased Latency	.36	.09	.00	-.08	.707
Conceptually grouped as avolition-apathy					
Grooming	-.21	-.07	-.29	-.27	.199
Conceptually grouped as role function					
Role Functioning Level	-.06	-.30	-.28	-.35	.088
Role Functioning Quality	.03	-.21	-.23	-.30	.148
Anergia	-.17	-.25	-.27	-.30	.150
Conceptually grouped as asociality-anhedonia					
Ability Intimacy	.21	.04	.20	.17	.421
Anhedonia	.15	-.26	.20	-.13	.531
Sexuality	-.19	-.26	-.02	-.02	.911
Asociality	.52	.06	.10	-.03	.905

Within a given cluster, items ordered based on magnitude of partial correlation

DUP was significantly associated with all measures within the Role-Functioning and Avolition-Apathy domains, along with two measures of Alogia (Poverty of Speech, Poverty of Content of Speech). Interestingly, with the exception of Poverty of Speech, all of these significant associations were negative, suggesting increased DUP is associated with lower negative symptomatology.

Race

It is noted that race was not controlled for in this study for two reasons. It was not theoretically predicted a priori and, given only two participants endorsed Asian-American, it would have resulted in dropping nearly 10% of the sample. However, research has suggested that race is related to these symptoms of psychosis, particularly differences between Black and White participants (Anglin et al., 2019; Millman et al., 2019). To help further understand these differences, and to contextualize the findings of the current study, descriptive statistics were estimated for Black and White participants as well as determining an estimate of Cohen's *d* corresponding to the mean difference. Cohen's *d* can appropriately be thought of as a standardized mean difference with proposed guidelines of 0.20, 0.50, and 0.80 corresponding to small, moderate, and large, respectively.

Examining statistics in Tables 4 and 5 suggests that the mean difference was moderate (or greater) on four of the positive symptoms and four of the negative symptoms. Importantly, in all instances Black participants were rated higher on these symptom measures. Moreover, of the 34 items, Black participants were rated higher on 24 of them. The only symptom in which White participants were rated higher that had a small-to-moderate effect size was Depressiveness ($d = 0.44$). Given the somewhat robust

race differences, the primary analyses presented above were conducted again controlling for race (in which the two Asian-American participants were dropped). Examination of the findings controlling for race were consistent with those presented in Tables 2 and 3 and were thus not provided here.

Table 4.

Mean BPRS Differences by Race

BPRS Items	White participants *M* (*SD*)	Black participants *M* (*SD*)	Cohen's *d*
Total Score	33.85 (10.05)	38.67 (7.39)	0.54
Somatic Concern	1.77 (1.09)	2.92 (1.16)	1.02
Hallucinations	1.46 (1.39)	2.58 (2.19)	0.62
Emotional Withdrawal	2.00 (1.00)	2.58 (1.16)	0.54
Depressiveness	2.38 (1.56)	1.75 (1.29)	0.44[a]
Blunted Affect	2.31 (1.25)	2.67 (1.44)	0.27
Suspiciousness	1.69 (1.25)	1.92 (1.08)	0.19
Grandiosity	0.12 (0.22)	0.17 (0.27)	0.19
Guilt	2.08 (1.55)	1.83 (1.11)	0.18[a]
Motor Retardation	2.00 (0.82)	2.17 (1.19)	0.16
Unusual Thought Content	2.00 (1.73)	1.83 (1.40)	0.11[a]
Poverty of Speech	0.12 (0.25)	0.10 (0.23)	0.10[a]
Tension	1.85 (1.21)	1.92 (1.16)	0.06
Hostility	2.08 (1.66)	2.17 (1.40)	0.06
Anxiety	2.92 (1.04)	2.92 (1.56)	0.00

[a] Black participants rated lower on these measures

Cohen's *d* values of .20, 0.50, and 0.80 correspond to small, moderate, and large, respectively

Table 5.

Mean SANS Differences by Race

SANS Items	White participants *M* (*SD*)	Black participants *M* (*SD*)	Cohen's *d*
Total Score	19.15 (11.64)	22.17 (11.22)	0.26
Increased Latency	0.38 (0.65)	1.08 (1.08)	0.79
Affective Non-Responsivity	0.23 (0.44)	0.92 (1.16)	0.79
Blocking	0.00 (0.00)	0.25 (0.62)	0.58
Poverty of Content of Speech	0.31 (0.85)	0.83 (1.27)	0.49
Paucity of Expression	1.08 (1.26)	1.75 (1.48)	0.49
Poor Eye Contact	1.46 (1.20)	1.92 (1.24)	0.37
Ability Intimacy	0.54 (0.97)	0.92 (1.08)	0.37
Poverty of Speech	0.46 (0.97)	0.83 (1.34)	0.32
Current Role Level	2.62 (2.40)	1.92 (2.02)	0.31[a]
Current Role Level Outpatient	2.31 (2.59)	1.58 (2.19)	0.30[a]
Grooming	0.69 (1.03)	1.00 (1.21)	0.28
Decreased Spontaneity	1.00 (1.00)	0.75 (0.97)	0.25[a]
Unchanging Facial Expression	1.46 (1.33)	1.75 (1.48)	0.21
Physical Anergia	1.54 (1.45)	1.67 (1.44)	0.09
Lack of Vocal Inflections	1.46 (1.61)	1.58 (1.51)	0.08
Anhedonia	0.92 (1.04)	0.83 (1.11)	0.08[a]
Sexuality	1.38 (1.89)	1.25 (1.96)	0.07[a]
Asociality	1.31 (1.32)	1.33 (1.44)	0.02

[a] Black participants rated lower on these measures

Cohen's *d* values of .20, 0.50, and 0.80 correspond to small, moderate, and large, respectively

Discussion

This study evolved from previous research linking prolonged DUP with poorer outcomes, including more pronounced symptomatology, higher likelihood of rehospitalization, and reduced occupational functioning. Although DUP has been well-established as a relatively strong predictor of outcomes, the method for assessing DUP is largely unstandardized and may benefit from a more unified approach. The goal for the current study was to first see whether use of the SIPS-DUP Interview could replicate previous findings. Additionally, a more exploratory goal sought to determine whether SIPS-DUP assessed DUP may also be linked to more specific symptoms at the item level of the BPRS and SANS. Unless otherwise stated, DUP will specifically refer to SIPS-DUP assessed DUP in the remaining discussion.

In an effort to obtain a clearer perception of the link between DUP and clinical symptom measures, partial correlation analyses were employed, controlling for age and duration of treatment. DUP in this sample was significantly and positively associated with BPRS items of Unusual Thought Content, Suspiciousness, Hallucinations, Grandiosity, Guilt, Anxiety, Hostility, Depressiveness, and Total Score, as well as with SANS Poverty of Content of Speech. DUP was also negatively correlated with BPRS Tension and the SANS items Poverty of Speech, Grooming, Role Functioning Level, Role Functioning Quality, and Anergia, which had not been theoretically predicted.

BPRS Total Score

Use of the SIPS-DUP Interview when assessing the effect of DUP on BPRS total score generally reflected findings from studies using similar measures. DUP remained a strong predictor of BPRS total scores, even when controlling for age and duration of

treatment. This finding is in line with previous studies measuring associations between DUP and BPRS total scores during treatment using other measures of DUP (Cechnicki, Hanuszkiewicz, Polczyk, & Bielanska, 2011; Üçok, Polat, Genç, Çakır, & Turan, 2004), as well as studies that assess other types of symptom severity partway through treatment (Howes et al., 2021), and provides preliminary support for the SIPS-DUP measure as a tool for assessing DUP.

Positive Symptoms

The association between DUP and positive symptomatology was also observed across a range of individual BPRS items. Five positive symptom items (i.e., Suspiciousness, Hallucinatory Behavior, Unusual Thought Content, Guilt, and Grandiosity) were significantly associated with DUP and had moderate or large relations. These findings suggest that the five positive symptoms may intensify in participants with more prolonged DUP and corroborate the existing literature.

Although mechanisms behind these links were not assessed, the associations between DUP and Suspiciousness, Unusual Thought Content, Grandiosity, Guilt, and Hallucinations were significant, with the first four of these items representing various types of delusions. One hypothesis for the link between DUP and delusional experiences is that such belief systems may stem from unhelpful irregularities in cognition (e.g., biases and the ability to correct incorrect judgments, jumps to conclusions, etc.; Bell, Halligan, & Ellis, 2006), leading them to proliferate until they are challenged by effective therapy. For example, cognitive-behavioral therapy introduces alternative explanations for unhelpful cognitions may help dispel implausible belief systems and replace them with more evidence-based explanations. If this therapy is delayed, belief

systems may go unchallenged for extended periods of time, which might then lead to delusions as measured by the BPRS. In contrast, if therapy is introduced more proximally to the onset of therapy, consumers may benefit from early efforts to stem unhelpful cognitions.

General Psychopathology.

While much of the DUP literature has focused on active phase symptoms and functional outcomes, less might be known about other psychological concerns, and several possibilities exist as to why DUP was significantly associated with Anxiety, Depression and Hostility. First, a longer period of psychotic illness may lead to increased anxiety or depression as the progression of the illness becomes more apparent and potentially debilitating. Because longer DUP might signify a lack of knowledge about, or confidence in, treatment, it stands to reason that hopelessness may segue into more generalized types of psychopathology. Similarly, an elevation in one's hostility may also be a downstream effect of hallucinatory or delusional experiences, which has been found in prior studies (Faay & van Os, 2020).

Conversely, it may be that these symptoms are not necessarily by-products of DUP, but rather serve as sequalae to the onset of psychosis itself. In fact, those eventually meeting criteria for clinical high risk are often referred initially for anxious or depressive symptoms (Stowkowy, Colijn, & Addington, 2012), suggesting that other types of psychopathology may precede psychosis onset. Considering the high rates of co-occurrence between general psychopathology and psychosis (McAusland et al., 2015; Millman, Gold, & Mittal, 2019), further research into how these types of symptomatology interact may be necessary.

Psychomotor Flattening

One minor finding was the SIPS-DUP's significant association with Tension (i.e., "motor restlessness [agitation]"), which was included under the "Psychomotor Flattening" domain. Unlike the other three items in this category, BPRS Tension refers to a motor *excess* and was negatively correlated with DUP, suggesting that DUP may be associated with a more relaxed clinical presentation. In terms of why this link exists, a behavioral approach might suggest that those exhibiting calmer behaviors may not draw the same clinical concern as those with more excessive or agitative behaviors, thereby minimizing the likelihood that others will identify these people as needing treatment. Alternatively, it may be that longer DUP leads to a more exacerbated flatness. Although no study to date has found that DUP uniquely and exclusively contributes to this psychomotor flattening, several meta-analyses have found that DUP may have a direct effect on negative symptom severity when controlling for premorbid factors (Marshall et al., 2005; Perkins, 2005). One study found that shorter-DUP participants may experience decreases in negative symptom severity throughout treatment while longer-DUP participants experience increases, suggesting that these experiences may be inconstant.

Expressive Language

These findings also found that DUP was positively correlated with impoverished speech content (e.g., nebulous, overabstract, overconcrete or repetitive) and negatively with quantity (e.g., brief, concrete, or unelaborated), both of which are characteristics of "formal thought disorder" in schizophrenia. Formal thought disorder occurs in approximately 20% of patients and, like other symptoms, can be conceptualized as positive (e.g., impoverished content) and negative (e.g., impoverished quantity) in

nature. For example, patients have also been differentiated from healthy controls based on deficits in "speech connectedness" (i.e., organized expressive language with in analyzed speech samples; Spencer et al., 2021) and premorbid expressive language abilities (Bearden et al., 2000).

Although research on the effect of DUP on language abilities is sparse, these findings are consistent with some evidence that DUP may be uniquely associated with more "positive" thought disorder (Birnbaum et al., 2015). One potential explanation is that, due to this symptom's emergence prior to psychosis onset (Bearden et al., 2000; Mouridsen & Hauschild, 2008), it may obscure others' ability to detect aberrations and facilitate help. Moreover, the genetic underpinnings of expressive language deficits in schizophrenia-related disorders (Asarnow et al., 2002; Welham et al., 2010) may make it difficult for parents with similar difficulties to identify these deficits in their children.

Volition and Role Functioning

Another important marker in psychosis assessment is how one remains motivated and pursues vocational success. In the current study, DUP was negatively associated with measures of vocational functioning, anergia, and grooming, which contrasts with most of the current research indicating that longer DUP often results in poorer outcomes in these domains (Kane et al., 2016). However, much of this research on the effects of DUP and role functioning has been collected in community settings where a wider range of these clinical ratings may occur. Unlike community-based studies, clients in the current sample participated in voluntary research and may represent a higher range of more motivated individuals. Moreover, it may be the case that participants prioritized their schooling or employment over seeking treatment, suggesting that there may be a

subset of people who delay treatment for reasons related to high role-functioning or motivation.

Non-significant Findings

A significant link was not detected between DUP and the BPRS items of Motor Retardation, Poverty of Speech, Blunted Affect, Emotional Withdrawal, and Somatic Concern. There was also no significant link between DUP and SANS items of Paucity of Expression, Unchanging Facial Expression, Decreased Spontaneity, Lack of Vocal Inflections, Affective Non-Responsivity, Poor Eye Contact, Increased Latency, Ability for Intimacy, Anhedonia, Sexuality, or Asociality.

There are several possible explanations for the null findings, including a lack of statistical power as a result of few participants, as well as use of construct measurements that are not theoretically related between the SIPS-DUP Interview tool and these outcome measures. The latter may be especially true for negative symptom items, as psychosis onset is predicated on positive symptoms meeting a predetermined threshold, potentially making relations between DUP and positive symptoms inherently stronger than DUP with other types of outcomes. It may also be the case that these clinical measures were intended to assess the full spectrum of psychosis (i.e., from first episode to the more chronic), where some symptoms may not become as prevalent until later in the illness.

Mechanisms between SIPS-DUP assessed DUP and Symptoms

Although the mechanisms linking DUP and various clinical symptoms were not examined in this study, the literature offers several hypotheses. One proposed hypothesis is the “neurotoxic” effect of psychosis. This theory suggests that the progression of

untreated psychosis can result in measurable degeneration of brain structures involved in symptom development (Goff et al., 2018; Lappin et al., 2006), but that antipsychotic medication may help to slow or stop this process. However, evidence for the neurotoxic theory remains inconclusive (Anderson, Voineskos, Mulsant, George, & McKenzie, 2014).

Another suggestion is that those with a longer DUP represent a subset of the population with "a more severe form of schizophrenia, typified by an early and insidious onset, poor premorbid functioning, and treatment resistance" (Jonas et al., 2020). These first two characteristics make it understandably difficult to identify the emergence of a first episode, where more robust changes in behavior may make psychosis more detectable. Further, other studies have identified tendencies for long-DUP clients to have a smaller social network and be more withdrawn, leading them to a longer DUP (Drake et al., 2000; Larsen, Johannessen, & Opjordsmen, 1998). Taken together, these hypotheses suggest that both innate characteristics and surrounding environmental factors may contribute to the link between DUP and symptoms.

Also, more recent research has suggested that DUP findings may simply be an artifact of study design (Jonas et al., 2020). Termed "lead-time bias," this phenomenon refers to the idea that differences in symptom severity may be more a function of *when* people are assessed rather than the length of their untreated psychosis. It postulates that people generally experience a similar rate of decline following the onset of psychosis, but that short-DUP clients, who seem to be doing relatively better at the beginning of treatment, simply have not fully experienced this decline yet. Future DUP research

would do well to include frequent and sensitive re-assessment of symptoms at baseline and throughout treatment.

Future use of the SIPS-DUP Interview in this research may help clarify the effects of premorbid functioning, symptom types, and other variables on the link between DUP and outcomes. This measure's capture of the full psychosis continuum may be particularly helpful in explaining the differential effects of acute and insidious onset of illness given its ability to detect changes between low risk, clinical high risk, and full-threshold psychosis. Additionally, the concision of the SIPS-DUP Interview allows it to be easily readministered over multiple timepoints, which may help the field better understand the effect of lead-time bias for people well into their treatment.

Utility of the SIPS-DUP Interview

These findings corroborate previous research suggesting a strong link between DUP and positive symptom-related outcomes and less robust associations with negative symptoms (Kane et al., 2016). Further research into the emergence of negative symptomatology may provide a clearer understanding of whether this pattern of findings is theoretically stable or an artifact due, in part, to the overwhelming focus on positive symptoms as the first marker of full-threshold psychosis in the field.

While we cannot suggest the SIPS-DUP Interview to be psychometrically superior to other measures of DUP, the ability for it to be frequently re-assessed and effectively probe at the lower end of symptoms expression could help to fill the gaps in understanding symptoms during both illness and treatment. Recurring administrations of the SIPS-DUP Interview during treatment may help neutralize concerns around lead-time bias and ideally inform the field on the utility of the SIPS-DUP Interview as a tool

for assessing DUP. Use of the SIPS-DUP Interview at the item level may also help clarify the psychological symptoms most affected by DUP and underscore the importance of facilitating treatment as quickly as possible.

Limitations

This study was impacted by several limitations, the largest of which was the small sample size (n = 27). This resulted in underpowered analyses, requiring that both significant and null findings be interpreted cautiously. In an effort to avoid Type II error, a correlation coefficient was used to identify the threshold for "significant" findings, as traditional hypothesis testing was potentially over-conservative. Additionally, several variable distributions could not be made normal even following transformations, resulting violated statistical assumptions that prevented the running of certain analyses.

The lack of a longitudinal design prevented us from fully understanding the impact of treatment, as participants were measured only once, at a random point, within their first year of treatment. Although duration of treatment was controlled for, measuring symptom change over time could provide information into how DUP affects the trajectory of symptoms as well. This is especially important considering the variability of symptom severity in those first entering treatment and the potential impact of lead-time bias. If lead-time bias is a confounding issue in this study, future research may benefit from follow-up measures well after the onset of treatment in order to understand the impact of prolonged DUP and treatment resistance.

The voluntary nature of the study may also skew these data, as participants had the choice to opt into research through their respective clinical programs. As a result, it is possible that those agreeing to participate were characteristically different from the

general first episode population. The motivation or agreeableness demonstrated by those choosing to participate in research may be representative of broader volitional characteristics, which may lead this research sample to be more likely to seek treatment, thus having a lower DUP, and thus limiting generalizability. A more ideal design would have the SIPS-DUP Interview and clinical ratings occur as part of their treatment, which would help to capture a more representative sample.

Another important measurement limitation is the use of the BPRS total score as a proxy for positive symptom severity. While the BPRS does include many items traditionally associated with positive symptoms, it is also composed of other symptom domains (e.g., Blunted Affect, Disorientation, Uncooperativeness, etc.) that may have detracted from its overall utility as a positive symptom measure. This dilution of a positive symptom sum may have affected the validity of these analyses, and the use of a more positive symptom-specific measure may have reduced statistical noise.

In terms of the generalizability of this research, it is important to understand that the majority of DUP research traditionally focuses on the consumer's symptom levels when they first begin treatment, whereas the clinical ratings in this study (i.e., BPRS and SANS) did not reflect a "true" baseline. The duration of treatment may have introduced other factors impacting these ratings, such as benefits of antipsychotic medication, psychosocial strategies to help reduce symptom impact, insight about one's illness, etc. Controlling for duration of treatment may help account for some variance, but cannot be expected to remove all statistical noise when assessing the relation between DUP and clinical symptom severity. Moreover, this delayed administration of the SIPS-DUP Interview and clinical ratings may be confounded not only by treatment factors, but also

the increase in time elapsed since the first episode, which may negatively affect a participant's ability to recall specific dates in which symptoms cross over the psychosis threshold. This recall may already be difficult due to confusion or disorganization during the episode, and asking participants to recall these events long after treatment has begun may increase the difficulty of accurately eliciting onset dates for psychosis and psychosis treatment. Additionally, successful, long-term treatment may distort one's view of their initial symptoms if they have become accustomed to being asymptomatic.

The current study also did not measure convergent validity of the SIPS-DUP Interview, as correlating its findings along with established measures of DUP would have helped determine the degree to which this measure taps into the targeted construct. Although we believe that innovations within the SIPS-DUP Interview improve the capture of DUP from a technical perspective (e.g., probing at the lower end of symptom expression, providing multiple probes for each symptom, etc.), analyses comparing it to other measures of DUP would have provided a more objective view of its ability.

Taking the findings at face value, a refined measurement of DUP may help inform direct care. First, identifying which components of mental well-being are most impacted by DUP can provide clinicians individualized expectations when treating those with psychosis. For example, someone with longer DUP may exhibit more anxiety, requiring the clinician to adapt their symptomatology probing techniques. Second, refined measurement of DUP may afford a more refined understanding of symptom emergence (e.g., from low- to high- to full-threshold psychosis), which would allow for more individualized and efficacious dialogue. Finally, to the extent that a better understanding of DUP is related to severity of outcomes, it is the case that the refined

measurement of DUP would impact treatment protocols earlier in the process, thus providing the appropriate levels of treatment to the affected individual sooner in the process. Again, these are translational aspects of the current study based on the results as observed. Given the implications of any of the examples provided, it is of importance that research into the measurement of DUP continue with independent and notably larger samples to confirm the findings.

Future Directions

Validation of the SIPS-DUP Interview as an acceptable measure of DUP may also benefit from several improvements. First, it is critical that future studies obtain sample sizes large enough to conduct traditional hypothesis testing that can elicit more reliable results. Likewise, more diverse samples along the full continuum of care (e.g., inpatient hospitalization, partial hospitalization, outpatient treatment, etc.) and in various geographical and cultural areas may help clarify whether the SIPS-DUP is applicable beyond the current study's context. To this end, it may also be useful for future studies to integrate the SIPS-DUP Interview into routine clinical care instead of voluntary research, as the latter may lead to self-selection biases.

Additionally, future SIPS-DUP Interview studies may also be improved through a more standardized outcome administration schedule. Although duration of treatment did not significantly impact most findings in the current study, the variability may make it difficult to ascertain exactly when relations between DUP and outcomes begin to form. Further, longitudinal assessment may help the field understand how these variables relate to one another at treatment onset and whether these relations change as a result of treatment.

It will also be important for future studies using the SIPS-DUP Interview to use measures that are specific to the intended constructs. The current study's use of the BPRS total score as a proxy for positive symptom severity may have resulted in Type II error, considering that some items may not necessarily map onto the positive symptom experience. If possible, use of multiple types of negative and positive symptom outcome measures may help researchers understand specifically what relations might exist between DUP and symptoms at the individual item level. Additionally, integration of multiple types of DUP measure could also help determine the relation between SIPS-DUP assessed DUP and other tools capturing DUP, providing a measure of convergent validity.

Appendix A

Rationale for using the Structured Interview for Psychosis-Risk Syndromes (SIPS) to track psychosis onset

Measuring the duration of untreated psychosis (DUP) among FEP clients is essential to EIP efforts. Despite the obvious need and importance, the field has not come to a consensus as to how to measure DUP. Additionally, understanding symptom development during the CHR phase may lead to more effective interventions at the earliest stages of illness. To track both psychosis onset, as well as risk symptoms, it seems logical to use one comprehensive tool designed to be sensitive to at-risk phases of illness as well as psychosis onset.

The Structured Interview for Psychosis-Risk Syndromes (SIPS) is an assessment tool designed to screen individuals for attenuated positive symptoms that are characteristic of the CHR population, while also distinguishing between those at CHR from those with diagnosable psychosis. The SIPS assesses five positive symptom categories rated on a scale ranging from symptom absence (0) to psychotic intensity symptoms (6), with scores from 3 to 5 falling in the at-risk range. The following psychosis symptoms are included in the SIPS: 1) unusual thought content/delusional ideas, 2) suspiciousness or persecutory ideas, 3) grandiose ideas, 4) perceptual abnormalities/hallucinations, and 5) disorganized communication. These symptoms map on to hallmark characteristics of psychosis that are evaluated by other commonly used assessment tools in the field, making it an appealing option to integrate both CHR and FEP efforts.

The SIPS guides clinicians in making distinctions between attenuated and psychotic intensity symptoms by outlining clear criteria for diagnosis and providing specific probes and anchors to thoroughly assess and rate symptoms. A rating of "psychotic" on the SIPS refers to "severe" symptoms, clearly present, accompanied by conviction and functional interference, critical components of true psychosis. Conviction is defined as a belief that the symptom is real (with no doubt), at least intermittently, and functional interference is defined as persistent interference in thinking, feeling, social relations or behavior since symptom onset. In addition to these criteria, a diagnosis of psychosis requires that one (or more) psychotic intensity symptom was either seriously disorganizing/dangerous or occurred regularly over a one month period (i.e. at least 1 hour per day at an average frequency of 4 days per week). Applying these same criteria for psychosis across CHR and FEP populations will allow for a standardized definition of onset, helping to maximize consistency in tracking symptom progression and course of illness.

We created the following SIPS-derived tools to help facilitate DUP identification:

1) SIPS PSYCHOSIS IDENTIFICATION: CLINICIAN INSTRUCTIONS. Contains directions for clinicians using the SIPS Psychosis Identification tools to assess DUP for clients entering the FEP clinic.
2) SIPS PSYCHOSIS IDENTIFICATION: PROBE WORKSHEET. Contains specific probes from the SIPS along with follow-up probes that allow for the determination as to whether a positive endorsement meets criteria for psychosis. Likely used when the client is new to the assessor and a comprehensive gathering of information is required.
3) SIPS PSYCHOSIS IDENTIFICATION: ASSESSMENT TOOL. Contains the SIPS definition of attenuated and full threshold psychosis, as well as SIPS derived anchors for symptom severity, frequency anchors, and probes for symptom onset. Likely used to document psychosis onset and attenuated symptom onset (optional).
4) DUP INTERVIEW. Contains symptom information that was captured from the above two tools. Probes specifically about treatment and is used to identify the onset of treatment.

SIPS PSYCHOSIS IDENTIFICATION: CLINICIAN INSTRUCTIONS

The following instructions are intended to guide clinicians in using the SIPS Psychosis
Identification Assessment Tool and Probe Worksheet to determine the duration of untreated psychosis (DUP) and complete the DUP Interview form.

The Assessment Tool is the primary form to be used for evaluating and summarizing
psychotic symptoms using SIPS criteria to determine duration of untreated psychosis (DUP). This form briefly describes the experiences and behaviors captured by each of the five positive symptoms included in the SIPS (P1: unusual thought content/delusional ideas, P2: suspiciousness/persecutory ideas, P3: grandiosity, P4: perceptual abnormalities, and P5: disorganized communication). P1-P5 should be rated on a scale from 0 (absent) to 6 (severe/psychotic) according to the anchors provided for each symptom category.

- A score "0", "1", or "2" indicates that the symptom is either absent (0), or insignificant/inconsequential (1: questionably present, or 2: mild).
- A score of "3", "4", or "5" indicates that the symptom is present in an attenuated form. These psychosis-risk scores indicate that the symptom is recurrent, and noticed by the individual (likely causing some impairment), but doubt as to whether the symptom is real remains intact (or can be induced).
- A score of "6" indicates that the symptom is "severe/psychotic", meaning that it is clearly present and accompanied by conviction and functional interference. Conviction is a belief that the symptom is real (with no doubt), at least intermittently. Functional interference is persistent interference in thinking, feeling, social relations or behavior since symptom onset.
- A "psychotic" rating (6) on one or more positive symptoms indicates psychosis if the symptoms were either A) seriously disorganizing or dangerous, or B) occurred for at least 1 hour per day at an average frequency of 4 days per week over 1 month. If criteria for psychosis is met, the date that the symptom first met criteria should be recorded.

The Probe Worksheet can be used in conjunction with the assessment tool and includes specific probes to evaluate each of the SIPS positive symptoms. The probe worksheet helps to guide the clinician in thoroughly evaluating P1-P5 and is especially helpful if limited clinical knowledge is available for the client (e.g., those new to our system). Specific criteria for psychosis are included for each probe and should be evaluated for all symptoms of psychotic intensity. For all symptoms indicating psychosis, record the earliest date that symptom met criteria for psychosis. Of all the symptoms that have ever met criteria for psychosis, record the *earliest* psychosis onset date as well as the earliest date that symptom was present in an attenuated form.

Directions for use: When evaluating new clients who were not previously assessed at the high-risk clinic, clinicians should conduct an interview utilizing the full probe worksheet in order to complete the assessment form. If a client is referred from the high-risk clinic, previous assessment information from the SIPS may be used to determine date of onset for attenuated symptoms. The pre-collected SIPS information can also be used to guide

clinicians in assessing symptoms previously endorsed by the client. In this case, it may not be necessary to rely on the probe worksheet to guide the interview, instead, the clinician can assess only relevant symptoms.

SIPS PSYCHOSIS IDENTIFICATION: PROBE WORKSHEET

P. POSITIVE SYMPTOMS

Present: Check if symptom is endorsed at an attenuated or psychotic level of intensity either currently or at any point in the past.

Psychotic Intensity: Indicates that the symptom is or was present and accompanied by conviction and interference.

Conviction: Belief that the symptom is real (with no doubt) at least intermittently.

Interference: Symptom interferes persistently with thinking, feeling (e.g., causes distress), social relations, and/or behavior.

Disorganizing or Dangerous or Frequent: Symptom is/was ever seriously disorganizing or dangerous *OR* symptom meets frequency criteria for psychosis (symptom occurrence of at least 1 hour/day at an average frequency of 4 days/week over 1 month).

Frequency: Record minutes/hours per day, days per week, weeks per month, at highest frequency.

Psychosis Onset Date: Earliest date psychotic symptom became 1) disorganizing/dangerous *OR* 2) met psychosis frequency criteria.

P. 1. UNUSUAL THOUGHTS/DELUSIONAL IDEAS	Present	Psychotic Intensity	Disorganizing or Dangerous or Frequent	Frequency	Psychosis Onset Date
1.1. Have you had the feeling that something odd is going on or that something is wrong that you can't explain?	__	Y N	Y N		
1.2. Have you ever been confused at times whether something you have experienced is real or imaginary?	__	Y N	Y N		
1.3. Do familiar people or surroundings ever seem strange? Confusing? Unreal? Not a part of the living world? Alien? Inhuman? Evil?	__	Y N	Y N		
1.4. Does your experience of time seem to have changed? Unnaturally faster or slower?	__	Y N	Y N		
1.5. Have you felt that you are not in control of your own ideas or thoughts?	__	Y N	Y N		
1.6. Do you ever feel as if your thoughts are being said out loud so that other people can hear them?	__	Y N	Y N		
1.7. Do you ever think that people might be able to read your mind?	__	Y N	Y N		
1.8. Do you ever think that you can read other people's minds?	__	Y N	Y N		
1.9. Do you ever feel the radio or TV is communicating directly to you?	__	Y N	Y N		
1.10. Do you have strong feelings or beliefs that are very important to you, about such things as religion, philosophy, or politics?	__	Y N	Y N		

P. 1. UNUSUAL THOUGHTS/DELUSIONAL IDEAS	Present	Psychotic Intensity	Disorganizing or Dangerous or Frequent	Frequency	Psychosis Onset Date
1.11. Do you daydream a lot or find yourself preoccupied with stories, fantasies, or ideas? Do you ever feel confused about whether something is your imagination or real?	__	Y N	Y N		
1.12. Do other people tell you that your ideas or beliefs are unusual or bizarre? If so, what are these ideas or beliefs?	__	Y N	Y N		
1.13. Do you ever feel you can predict the future?	__	Y N	Y N		
1.14. Do you ever worry that something might be wrong with your body or your health?		Y N	Y N		
1.15. Have you ever felt that you might not actually exist? Do you ever think that the world might not exist?		Y N	Y N		
P. 2. SUSPICIOUSNESS/PERSECUTORY IDEAS					
2.1. Do you ever feel that people around you are thinking about you in a negative way? Have you ever found out later that this was not true or that your suspicions were unfounded?		Y N	Y N		
2.2. Have you ever found yourself feeling mistrustful or suspicious of other people?		Y N	Y N		
2.3. Do you ever feel that you have to pay close attention to what's going on around you in order to feel safe?		Y N	Y N		
2.4. Do you ever feel like you are being singled out or watched?		Y N	Y N		
2.5. Do you ever feel people might be intending to harm you? Do you have a sense of who that might be?		Y N	Y N		
P. 3. GRANDIOSE IDEAS					
3.1. Do you feel you have special gifts or talents? Do you feel as if you are unusually gifted in any particular area? Do you talk about your gifts with other people?	__	Y N	Y N		

P. 4. PERCEPTUAL ABNORMALITIES/HALLUCINATIONS	Present	Psychotic Intensity	Disorganizing or Dangerous or Frequent	Frequency	Psychosis Onset Date
4.1. Do you ever feel that your mind is playing tricks on you?		Y N	Y N		
4.2. Do you ever think you hear sounds and then realize that there is probably nothing there?		Y N	Y N		
4.3. Do you ever hear your own thoughts as if they are being spoken outside your head?		Y N	Y N		
4.4. Do you ever hear a voice that others don't seem to or can't hear? Does it sound clearly like a voice speaking to you as I am now? Could it be your own thoughts or is it clearly a voice speaking out loud?		Y N	Y N		
4.5. Have you ever seen unusual things like flashes, flames, vague figures or shadows out of the corner of your eye?		Y N	Y N		
4.6. Do you ever see things that others can't or don't seem to see?		Y N	Y N		
4.7. Have you noticed any unusual bodily sensations such as tingling, pulling, pressure, aches, burning, cold, numbness, vibrations, electricity, or pain?		Y N	Y N		
4.8. Do you ever smell or taste things that other people don't notice?		Y N	Y N		
P. 5. DISORGANIZED COMMUNICATION					
5.1. Do people ever tell you that they can't understand you? Do people ever seem to have difficulty understanding you?		Y N	Y N		
5.2. Are you aware of any ongoing difficulties getting your point across, such as finding yourself rambling or going off track when you talk?		Y N	Y N		

Summary:

S1a. Record the earliest psychosis onset date: _____

S1b. Indicate which symptom first met criteria for psychosis by recording the corresponding question number and provide a brief description of the symptom:

_____

_____

_____

_____

After identifying the earliest psychosis onset date, probe further to pinpoint the earliest date that symptom occurred at an attenuated level (i.e. it was distressing or interfering, but would not meet criteria for psychosis because it was less frequent or present without conviction).

S2a. Attenuated symptom onset date: _____

S2b. Provide a brief description of the attenuated symptom:

_____
_____
_____
_____

SIPS PSYCHOSIS IDENTIFICATION: ASSESSMENT TOOL

Rate the most severe experience endorsed for each symptom domain.
Psychotic Intensity (rating of 6): Indicates that the symptom is/was present with conviction and interference.

Conviction: Belief that the symptom is real (with no doubt) at least intermittently.

Interference: Symptom interferes persistently with thinking, feeling (e.g., causes distress), social relations, and/or behavior.

For each symptom rated psychotic (6), assess the following psychosis criteria:

Disorganizing/Dangerous: Is the symptom seriously disorganizing or dangerous, or was it ever in the past?

Frequency: Has the symptom occurred for at least 1 hour/day at an average frequency of 4 days/week for 1 month?

If a psychotic symptom has ever met either of the above psychosis criteria, psychosis onset should be recorded.

Date of Psychosis Onset: What is the earliest date that the symptom met psychosis criteria?

If possible, for each symptom domain that meets criteria for psychosis, pinpoint the earliest date that symptom occurred at an attenuated level. Use the anchors provided to evaluate attenuated symptoms. Note: symptoms of psychotic intensity (rated 6) that do not meet criteria for psychosis (e.g., symptoms that are less frequent and not seriously disorganizing or dangerous) should be considered attenuated symptoms.

P. 1. UNUSUAL THOUGHT CONTENT/DELUSIONAL IDEAS

a. Perplexity and delusional mood. Mind tricks, such as a sense that something odd is going on or puzzlement and
confusion about what is real or imaginary. Familiar feels strange, confusing, ominous, threatening, or has special
meaning. Sense that self, others, the world have changed. Changes in perception of time, déjà vu experience.
b. Non-persecutory ideas of reference.
c. First rank phenomenology. Mental events such as thought insertion/interference/withdrawal/broadcasting/
telepathy/external control/radio and TV messages.
d. Overvalued beliefs. Preoccupation with unusually valued ideas (religion, meditation, philosophy, existential
themes). Magical thinking that influences behavior and is inconsistent with subculture norms (e.g., being
superstitious, belief in clairvoyance, uncommon religious beliefs).
e. Unusual ideas about the body, guilt, nihilism, jealousy and religion. Delusions may be present but are not well
organized and not tenaciously held.

Rate the individual's most severe rating:

0 Absent	1 Questionably Present	2 Mild	3 Moderate	4 Moderately Severe	5 Severe but Not Psychotic	6 Severe and Psychotic
	"Mind tricks" that are puzzling. Sense that something is different.	Overly interested in fantasy life. Unusually valued ideas/ beliefs. Some superstitions beyond what might be expected by the average person but within cultural norms.	Unanticipated mental events that are puzzling, unwilled, but not easily ignored. Experiences seem meaningful because they will recur and will not go away. Functions mostly as usual.	Sense that ideas/ experience/ beliefs may be coming from outside oneself or that they may be real, but doubt remains intact. Distracting, bothersome. May affect functioning.	Experiences familiar, anticipated. Doubt can be induced by contrary evidence and others' opinions. Distressingly real. Affects daily functioning.	Delusional conviction (with no doubt) at least intermittently. Interferes persistently with thinking, feeling, social relations, and/or behavior.

Most severe rating: _____ Date of most severe rating: _____

Rating based on (provide brief description):_____

_____

Frequency of symptom: ☐ ≥ 1 h/d, ≥4d/wk, ≥ 1x/mo; ☐ ≥ several minutes/d, ≥ 1x/mo; ☐ ≥ 1 x/wk in past mo; ☐ none

If ever rated "6": a) Disorganizing/Dangerous? Yes No b) Frequency ≥ 1 h/d, ≥4d/wk over 1 month? Yes No

c) Date of Psychosis Onset (date that criterion a or b was first achieved): _____

Date symptom first met attenuated criteria (score ≥ 3 but not meeting psychosis criteria):

_____

P. 2. SUSPICIOUSNESS/PERSECUTORY IDEAS

a. Persecutory ideas of reference.
b. Suspiciousness or paranoid thinking.
c. Presents a guarded or even openly distrustful attitude that may reflect delusional conviction and intrude on the
interview and/or behavior.

Rate the individual's current symptom severity as well as the most severe past rating:

0 Absent	1 Questionably Present	2 Mild	3 Moderate	4 Moderately Severe	5 Severe but Not Psychotic	6 Severe and Psychotic
	Wariness.	Concerns about safety. Hypervigilance without clear source of danger.	Concerns that people are untrustworthy and/or may harbor ill will. Sense of unease and need for vigilance (often unfocused). Mistrustful. Recurrent (yet unfounded) sense that people might be thinking or saying negative things about person.	Thoughts of being the object of negative attention. Sense that people may wish harm. Self-generated skepticism present. Pre-occupying, distressing. May affect daily functioning. May appear defensive in response to questioning.	Beliefs about danger from hostile intentions of others. Skepticism and perspective can prevail with non-confirming evidence or other's opinion. Anxious, unsettled. Daily functioning affected. Guarded presentation may diminish information gathered in the interview.	Delusional paranoid conviction (no doubt) at least intermittently. Frightened, avoidant, watchful. Interferes persistently with thinking, feeling, social relations, and/or behavior.

Most severe rating: _____ Date of most severe rating: _____

Rating based on (provide brief description):_____

_____

Frequency of symptom: ☐ ≥ 1 h/d, ≥4d/wk, ≥ 1x/mo; ☐ ≥ several minutes/d, ≥ 1x/mo; ☐ ≥ 1 x/wk in past mo; ☐ none

If ever rated "6": a) Disorganizing/Dangerous? Yes No b) Frequency ≥ 1 h/d, ≥4d/wk over 1 month? Yes No

c) Date of Psychosis Onset (date that criterion a or b was first achieved): _____

Date symptom first met attenuated criteria (score ≥ 3 but not meeting psychosis criteria):
_____

P. 3. GRANDIOSE IDEAS

a. Exaggerated self-opinion and unrealistic sense of superiority.
b. Some expansiveness or boastfulness.
c. Occasional clear-cut grandiose delusions that can influence behavior.

Rate the individual's current symptom severity as well as the most severe past rating:

0 Absent	1 Questionably Present	2 Mild	3 Moderate	4 Moderately Severe	5 Severe but Not Psychotic	6 Severe and Psychotic
	Private thoughts of being better than others.	Mostly private thoughts of being talented, understanding or gifted.	Notions of being unusually gifted, powerful, or special and have exaggerated expectations. May be expansive but can redirect to the everyday on own.	Beliefs of talent, influence, and abilities. Unrealistic goals that may affect plans and functioning, but responsive to other's concerns and limits.	Compelling beliefs of superior intellect, attractiveness, power, or fame. Skepticism and modesty can only be elicited by the efforts of others. Affects functioning.	Delusions of grandiosity with conviction (no doubt) at least intermittently. Interferes persistently with thinking, feeling, social relations, or behavior.

Most severe rating: _____ Date of most severe rating: _____

Rating based on (provide brief description):_____

_____

Frequency of symptom: ☐ ≥ 1 h/d, ≥4d/wk, ≥ 1x/mo; ☐ ≥ several minutes/d, ≥ 1x/mo; ☐ ≥ 1 x/wk in past mo; ☐ none

If ever rated "6": a) Disorganizing/Dangerous? Yes No b) Frequency ≥ 1 h/d, ≥4d/wk over 1 month? Yes No

c) Date of Psychosis Onset (date that criterion a or b was first achieved): _____

Date symptom first met attenuated criteria (score ≥ 3 but not meeting psychosis criteria):

_____

P. 4. PERCEPTUAL ABNORMALITIES/HALLUCINATIONS

a. Unusual perceptual experiences. Heightened or dulled perceptions, vivid sensory experiences, distortions, illusions.
b. Pseudo-hallucinations or hallucinations into which the subject has insight (is aware of their abnormal nature.)
c. Occasional frank hallucinations that may minimally influence thinking or behavior.

Rate the individual's current symptom severity as well as the most severe past rating:

0 Absent	1 Questionably Present	2 Mild	3 Moderate	4 Moderately Severe	5 Severe but Not Psychotic	6 Severe and Psychotic
	Minor, but noticeable perceptual sensitivity (e.g. heightened, dulled, distorted, etc.).	Unformed perceptual experiences/ changes that are noticed but are not considered to be significant.	Recurrent, unformed, images (e.g., shadows, trails, sounds, etc.), illusions, or persistent perceptual distortions that are puzzling and experienced as usual.	Illusions or momentary formed hallucinations that are ultimately recognized as unreal yet can be distracting, curious, unsettling. May affect functioning.	Hallucinations experienced as external to self though skepticism can be induced by others. Mesmerizing, distressing. Affects daily functioning.	Hallucinations perceived as real and distinct from the person's thoughts. Skepticism cannot be induced. Captures attention, frightening. Interferes persistently with thinking, feeling, social relations, and/or behavior.

Most severe rating: _____ Date of most severe rating: _____

Rating based on (provide brief description):_____

_____

Frequency of symptom: ☐ ≥ 1 h/d, ≥4d/wk, ≥ 1x/mo; ☐ ≥ several minutes/d, ≥ 1x/mo; ☐ ≥ 1 x/wk in past mo; ☐ none

If ever rated "6": a) Disorganizing/Dangerous? Yes No b) Frequency ≥ 1 h/d, ≥4d/wk over 1 month? Yes No

c) Date of Psychosis Onset (date that criterion a or b was first achieved): _____

Date symptom first met attenuated criteria (score ≥ 3 but not meeting psychosis criteria): _____

P. 5. DISORGANIZED COMMUNICATION

a. Odd speech. Vague, metaphorical overelaborate, stereotyped.
b. Confused, muddled, racing or slowed down speech, using the wrong words, talking about things irrelevant to
context or going off track.
c. Speech is circumstantial, tangential or paralogical. There is some difficulty in directing sentences toward a goal.
d. Loosening or paralysis (blocking) of associations may be present and make speech hard to follow or unintelligible.

Rate the individual's current symptom severity as well as the most severe past rating:

0 Absent	1 Questionably Present	2 Mild	3 Moderate	4 Moderately Severe	5 Severe but Not Psychotic	6 Severe and Psychotic
	Occasional word or phrases doesn't make sense.	Speech is slightly vague, muddled, overelaborate or stereotyped.	Incorrect words, irrelevant topics. Goes off track, but redirects on own.	Speech is clearly circumstantial (i.e. eventually getting to the point). Difficulty in directing sentences toward a goal. Sudden pauses. Can be redirected with occasional questions and structuring.	Speech tangential (i.e. never getting to the point). Some loosening of associations or blocking. Can reorient briefly with frequent prompts or questions.	Communication persistently loose, irrelevant or blocked and unintelligible when under minimal pressure or when the content of the communication is complex. Not responsive to structuring of the interview.

Most severe rating: _____ Date of most severe rating: _____

Rating based on (provide brief description):_____

_____

Frequency of symptom: ☐ ≥ 1 h/d, ≥4d/wk, ≥ 1x/mo; ☐ ≥ several minutes/d, ≥ 1x/mo; ☐ ≥ 1 x/wk in past mo; ☐ none

If ever rated "6": a) Disorganizing/Dangerous? Yes No b) Frequency ≥ 1 h/d, ≥4d/wk over 1 month? Yes No

c) Date of Psychosis Onset (date that criterion a or b was first achieved): _____

Date symptom first met attenuated criteria (score ≥ 3 but not meeting psychosis criteria):
_____

DUP INTERVIEW

This form should be completed using symptom information obtained on the SIPS Psychosis Identification Assessment Tool and Probe Worksheet

Patient Name: _____, _____ Date of Intake: __ __/ __ __/ __ _

PLEASE USE EITHER AGE OR DATE IN ALL ITEMS ON THIS FORM

1. Psychosis onset interview (All dates or ages should be accurate to the week if possible. If not, the month or year.)

Complete items 1a-1b using items S1a and S2a from the SIPS Psychosis Identification Assessment Tool
Using the earliest date reported, indicate the dates of onset and the associated symptoms

Onset of	Date			Age[b]	Based on Symptom Category (check all that apply)				
	Month	Day[a]	Year		P1	P2	P3	P4	P5
1a Psychosis									
1b Attenuated Symptom									

When did the following occur:	Month	Day[a]	Year	Age[b]
1c. First time family or others observed a symptom of psychosis				
1d. First ER visit/hospitalization for behavior problem				
1e. First seen for mental health care for symptoms of psychosis (regardless of treatment given)				

Specify:

Yes No Psychotic symptoms are better explained by another disorder or condition (use information obtained through diagnostic interviews and/or other assessment to verify).

If yes, symptoms are better explained by:

_____
_____
_____
_____

2. Treatment onset (All dates or ages should be accurate to the week if possible. If not, the month or year.)

When did the following occur:	Month	Day[a]	Year	Age[b]
2a. First dose of antipsychotics given				
2b. First completed a course of antipsychotics treatment for 1 month or more				
2c. First visit for mental health issues (including therapy, counseling, primary care). Specify issue:_____				
2d. First given non-medication treatment (therapy, counseling, alternative medicine)				
2e. First non-antipsychotic but psychotropic medication given				

a. Estimate the day within a week if possible. If day is not available, enter 99
b. Only use age if month and year are unknown.

DUP Evaluation Instructions:
Duration of untreated psychosis (DUP) is defined by the weeks between psychosis onset (item 1a) and the time adequate initial treatment has been given as defined by the first completed antipsychotics therapy for 1 month or more (item 2b).

From		MM	DD	YY	AGE
Item 1b					
Item 2b	-				
DUP	=				

3. DUP (in weeks) _____

Note: When sufficient information is not available for accurate date of psychosis onset or date of adequate treatment, briefly state below the information used to estimate the DUP.

Psychosis onset is defined as the date at which one (or more) positive symptom first reached psychotic intensity *and* was either seriously disorganizing/dangerous *or* occurred regularly over a one month period as defined by the Structured Interview for Psychosis-Risk Syndromes (SIPS). These determinations can be facilitated by accompanying worksheets (SIPS Psychosis Identification Assessment Tool and Probe Worksheet plus instructions).

- Psychosis is defined by having at least one of five positive symptoms: unusual thought content/delusional ideas, suspiciousness or persecutory ideas, grandiose ideas, perceptual abnormalities/hallucinations, or disorganized communication.
- A rating of "psychotic" on the SIPS refers to "severe" symptoms, clearly present, plus conviction and functional interference.
    - Conviction is defined as a belief that the symptom is real (with no doubt), at least intermittently.
    - Functional interference is defined as persistent interference in thinking, feeling (e.g., causes distress), social relations or behavior since symptom onset.
- A "psychotic" rating on one or more positive symptoms indicates psychosis if the symptoms were *either* A) seriously disorganizing or dangerous, *or* B) occurred for at least 1 hour per day at an average frequency of 4 days per week over 1 month.
- Multiple sources from patients, relatives, schools, and clinical records can be used for the assessment.

Appendix B

SANS (Scale for the Assessment of Negative Symptoms) *Form Version:*

AFFECTIVE FLATTENING OR BLUNTING

Affective flattening or blunting manifests itself as a characteristic impoverishment of emotional expression, reactivity, and feeling. Affective flattening can be evaluated by observation of the patient's behavior and responsiveness during a routine interview. The rating of some items may be affected by drugs, since the Parkinsonian side-effects of phenothiazines may lead to mask-like faces and diminished associated movements. Other aspects of affect, such as responsivity or appropriateness, will not be affected, however.

1. _____ Unchanging Facial Expression

The patient's face appears wooden, mechanical, frozen. It does not change expression, or changes less than normally expected, as the emotional content of discourse changes. Since phenothiazines may partially mimic this effect, the interviewer should be careful to note whether or not the patient is on medication, but should not try to "correct" his/her rating accordingly. Additionally, many patients may have initial anxiety about being interviewed and may therefore act in a "formal" manner during the beginning of the interview. Therefore, when rating facial expression, more emphasis should be given to the subject's facial expressiveness after he/she has had a chance to "warm up" to the interview. For subjects who still have decreased facial expressiveness after an appropriate "warm up" period, the interviewer should prompt the subject by smiling or telling a joke to see if the patient responds.

0 = Not at all. Patient is normal or labile.
1 = Questionable decrease.
2 = Mild. Slight decrease in the range of facial expression during the interview.
3 = Moderate. Range of facial expression is definitely restricted but there is some spontaneous expressiveness during the interview.
4 = Marked. Facial expression is wooden and/or unchanging except in response to prompting.
5 = Severe. Facial expression is wooden throughout the entire interview even when prompted.

2. _____ Decreased Spontaneous Movements

The patient shows few or no spontaneous movements, does not shift position, move extremities, etc.

0 = Not at all. Patient moves normally or is overactive.
1 = Questionable decrease.
2 = Mild. Some decrease in spontaneous movements.
3 = Moderate. Significant decrease in spontaneous movements.
4 = Marked. Movements are markedly decreased.
5 = Severe. Patients sits immobile throughout the interview.

3. _____ Paucity of Expressive Gestures

The patient does not use his/her body as an aid in expressing his/her ideas through such means as hand gestures, sitting forward in his/her chair when intent on a subject, leaning back when relaxed, etc. This may occur in addition to decreased spontaneous movements.

0 = Not at all. Patient uses expressive gestures normally or excessively.
1 = Questionable decrease.
2 = Mild. Uses expressive gestures but is less animated than appropriate for interview situation.
3 = Moderate. Uses expressive gestures sometimes but is noticeably less animated than appropriate for the interview situation.
4 = Marked. Patient very infrequently uses his/her body as an aid in expression.
5 = Severe. Patient never uses his/her body as an aid in expression.

4. _____ Poor Eye Contact

When speaking or listening, the patient avoids looking at the interviewer. He/she does not use eye contact to facilitate communication with the interviewer. Do not rate for periods when the patient looks away to compose his/her thoughts.

0 = Not at all. Good eye contact and expression.
1 = Questionable decrease.
2 = Mild. When speaking or listening, the patient overall maintains eye contact with the interviewer but does look away during the interview for brief periods of time.
3 = Moderate. Patient fails to make eye contact with the interviewer to the extent that communication between the patient and interviewer seems reduced.
4 = Marked. Patient does not make eye contact with the interviewer for most of the interview.
5 = Severe. Patient orients himself/herself away from the interviewer for most or all of the interview.

5. _____ Affective Non-Responsivity

The patient fails to smile or laugh when prompted.

0 = Not at all.
1 = Questionable lack of responsivity.
2 = Mild. Slight but definite lack in responsivity.
3 = Moderate. Moderate decrease in responsivity.
4 = Marked. Marked decrease in responsivity.
5 = Severe. Patient essentially unresponsive, even on prompting.

6. _____ Lack of Vocal Inflections

While speaking the patient fails to show normal vocal emphasis patterns. Speech has a monotonous quality, and important words are not emphasized through changes in pitch or volume. Patient also may fail to change volume with changes of subject so that he does not drop his voice when discussing private topics or raise it as he discusses things which are exciting or for which louder speech might be appropriate.

0 = Not at all. Normal vocal inflections.
1 = Questionable decrease.
2 = Mild. Slight decrease in range of vocal inflections.
3 = Moderate. Definite decrease in range of vocal inflections although subject has some spontaneous change in inflection.
4 = Marked. Most of speech during interview is in a monotone.
5 = Severe. Virtually all speech during interview is in a monotone.

7. _____ Global Rating of Affective Flattening

The global rating should focus on overall severity of affective flattening or blunting. Special emphasis should be given to such core features as lack of expression and overall decrease in emotional intensity.

0 = No flattening. Normal affect.
1 = Questionable affective flattening.
2 = Mild affective flattening.
3 = Moderate affective flattening.
4 = Marked affective flattening.
5 = Severe affective flattening.

ALOGIA

Alogia is a general term coined to refer to the impoverished thinking and cognition that often occur in patients with schizophrenia (Greek a = no, non; logos = mind, thought). Patients with alogia have thinking processes that seem empty, turgid, or slow. Since thinking cannot be observed directly, it is inferred from the patient's speech. The two major manifestations of alogia are nonfluent empty speech (poverty of speech) and fluent empty speech (poverty of content of speech). Blocking and increased latency of response may also reflect alogia.

8. _____ Poverty of Speech

Restriction in the amount of spontaneous speech, so that replies to questions tend to be brief, concrete, and unelaborated. Unprompted additional information is rarely provided. For example, in answer to the question, "How many children to you have", the patient replies, "Two. A girl and a boy. The girl is 13 and the boy is 10." "Two" is all that is required to answer the question, and the rest of the reply is additional information. Replies may be monosyllabic, and some of the questions may be left unanswered altogether. When confronted with this speech pattern, the interviewer may find himself/herself frequently prompting the patient in order to encourage elaboration of replies. To elicit this finding, the examiner must allow the patient adequate time to answer and to elaborate his answer.

0 = No poverty of speech. A substantial and appropriate number of replies to questions include additional information.
1 = Questionable poverty of speech.
2 = Slight poverty of speech. Occasional replies do not include elaborated information even though this is appropriate.
3 = Moderate poverty of speech. Some replies do not include appropriately elaborated information, and many replies are monosyllabic or very brief ("Yes." "No." "Maybe." "Don't know." "Last week.").
4 = Marked poverty of speech. Answers are rarely more than a few words in length.
5 = Severe poverty of speech. Patient says very little and occasionally fails to answer questions.

9. NA Poverty of Content of Speech (Do not use)

Although the subject's replies are long enough, they convey little information. Speech may be nebulous, overabstract, overconcrete or repetitive. The interviewer may find that the patient has spoken at some length but has not given adequate information to answer the question. Alternatively, the patient may provide enough information, but require many words to do so, so that a lengthy reply can be summarized in a sentence or two. Sometimes the interviewer may characterize the speech as "empty philosophizing."
Exclusions: This finding differs from circumstantiality in that the circumstantial patient tends to provide a wealth of detail.

0 = No poverty of content of speech.
1 = Questionable poverty of content of speech.
2 = Mild poverty of content of speech. Occasional replies are too vague to be comprehensible or can be markedly condensed.
3 = Moderate poverty of content of speech. Replies which are vague or can be markedly condensed make up at least a 1/4 of the interview.
4 = Marked poverty of content of speech. At least half of the patient's speech is composed of vague or incomprehensible replies.
5 = Severe poverty of contact of speech. Nearly all the patient's speech is vague, incomprehensible, or can be markedly condensed.

10. _____ Blocking

Interruption of a train of speech before a thought or idea has completed. After a period of silence which may last from a few seconds to minutes, the person indicates that he/she cannot recall what he had been saying or meant to say. Blocking should only be judged to be present if a person voluntarily describes losing his/her thought or if upon questioning by the interviewer the person indicates that that was hi/her reason for pausing.

0 = No blocking.
1 = Questionable decrease.
2 = Mild blocking. A single instance noted during a 15 minute period.
3 = Moderate blocking. Occurs twice during 15 minutes.
4 = Marked blocking. Occurs three times during 15 minutes.
5 = Severe blocking. Occurs more than three times.

11. _____ Increased Latency of Response

The patient takes a longer time to reply to questions than is usually considered normal. He/she may seem "distant" and sometimes the examiner may wonder if he/she has even heard the question. Upon questioning by the interviewer, the patient should indicate that he/she is aware of the question but is having difficulty in developing his/her thoughts.

0 = Not at all. Patient typically replies promptly.
1 = Questionable increase.
2 = Mild. Occasional brief pauses before replying.
3 = Moderate. Frequent brief pauses before replying or long pauses before replying to a third of questions.
4 = Marked. Long pauses before replying to half of questions.
5 = Severe. Long pauses prior to nearly all replies.

12. _____ Global Rating of Alogia

Since the core features of alogia are poverty of speech and poverty of content, the global rating should place particular emphasis on these.

0 = No alogia.
1 = Questionable alogia.
2 = Mild. Mild but definite impoverishment in thinking.
3 = Moderate. Significant evidence for impoverished thinking.
4 = Marked. Patient's thinking seems impoverished much of the time.
5 = Severe. Patient's thinking seems impoverished nearly all the time.

AVOLITION-APATHY

Avolition manifests itself as a characteristic lack of energy, drive and interest. Patients are unable to mobilize themselves to initiate or persist in completing many different kinds of tasks. Unlike the diminished energy or interest of depression, the avolitional symptom complex in schizophrenia is usually not accompanied by saddened or expressed effect.

13. _____ Grooming and Hygiene

The patient displays less attention to grooming and hygiene than normal. Clothing may appear sloppy, outdated, or soiled. Patient may bathe infrequently and not care for hair, nails, or teeth, leading to such manifestations as greasy or uncombed hair, dirty hands, body odor, or unclean teeth and bad breath. Overall, the appearance is dilapidated and disheveled. In extreme cases, the patient may even have poor toilet habits with soiling.

0 = No evidence of poor grooming and hygiene.
1 = Questionable decrease.

2 = Mild. Some slight but definite indication of inattention to appearance (e.g. hair not combed, rumpled clothing).
3 = Moderate. Appearance is somewhat disheveled (e.g. as above but more severe or clothes inappropriate or mismatched).
4 = Marked. Appearance is significantly disheveled (e.g. bathes infrequently, clothes soiled).
5 = Severe. Appearance is extremely disheveled (e.g. refused to bathe, clothes filthy, unfastened, or refuses to wear clothes).

ROLE FUNCTION

The patient may have difficulty fulfilling social role expectations (employment, school, homemaking) as appropriate for his or her age and cultural background.

In rating role functioning, one must consider both 1) the difficulty of the role that the patient is attempting to fulfill and 2) how well the patient is functioning within that role. Therefore, this item is rated in two parts. First, the degree to which the patient's current role is appropriate to his/her age and social and cultural background is rated. Next, the degree to which the patient fulfills that role is rated separately.

14. _____ Current Role Function - Level

Patient's current social/vocational level (Code 5 for inpatients)

0 = Age and socially appropriate role (full-time paid employment, matriculated in full-time school program NOT including psychiatric rehabilitation affiliated work or school programs, fulfills expectations of full-time homemaker, etc.).
1 = Questionable decrease.
2 = As above not full-time (part-time student, part-time paid employment, etc.)
3 = High-level psychiatric setting (high-level day program, vocational programs, etc.)
4 = Low-expectation psychiatric setting (e.g. social/recreational programs or undemanding training programs).
5 = Does not engage in any appropriate activities (no job, training program or therapeutic program) or is an inpatient.

15a. _____ Current Role Function – Quality – For Outpatients Only

Degree to which patient fulfills role noted above in item #14.

0 = Fulfills expectations of current role (as rated in previous item).
1 = Questionable decrease.
2 = Fulfills expectations of current role but with some difficulty (e.g. occasionally misses work, school or program without justifiable reason, occasionally fails to fulfill responsibilities.
3 = Has definite difficulty fulfilling role responsibilities (e.g. consistently fails to attend and/or participate appropriately in current role.
4 = Functioning at current role is seriously compromised and/or in danger of being dropped from current activity.
5 = Not functioning in role (Note: Patients given this rating should have been rated 5 on the item above).

15b. _____ Participation in Unit-Appropriate Activities – For Inpatients Only

Patients may have difficulty in attending and/or participating in assigned activities and general unit activities such as groups on the unit. Patients with mild impairment may attend activities but do not participate fully or do not complete assigned tasks. Patients with more severe impairment attend activities only with staff encouragement or not at all.

0 = Participates appropriately in unit activities.
1 = Questionable decrement in participation.
2 = Mild. Patient requires some encouragement to attend or maintain participation in activities.

3 = Moderate. Patient attends most activities but needs frequent prodding to attend or maintain participation.
4 = Marked. Patient needs activities less than half the time and/or participates minimally.
5 = Severe. Patient consistently fails to attend activities.

16. _____ Physical Anergia

The core concept is the extent to which the patient tests to be physically inactive given age-appropriate expectations of the general population. He/she may spend large amounts of time in physically inactive and mentally undemanding tasks such as watching TV. The family may report that he/she spends most of his/her time "doing nothing except sitting around." The patient may report an increased need to rest beyond that appropriate for his/her level of physical exertion. In sever cases, he/she may spend most or all of his/her time in bed.

0 = No evidence of physical anergia.
1 = Questionable physical anergia.
2 =Mild anergia. Spends slightly more time resting or in physically undemanding activities than expected given the patient's age.
3 = Moderate anergia. Spends a significant amount of time resting or in physically undemanding tasks.
4 = Marked anergia. Spends most of his/her time resting or in physically undemanding tasks.
5 = Severe anergia. Spends almost al of his/her time resting or in physically undemanding tasks.

17. _____ Global Rating of Avolition

The global rating should reflect the overall severity of the avolition symptoms, given expectations of outpatients.

0 = No avolition.
1 = Questionable avolition.
2 = Mild but definitely present.
3 = Moderate avolition.
4 = Marked avolition.
5 = Severe avolition.

ASOCIALITY-ANHEDONIA

18. _____ Asociality

The core features of asociality is a decrease in social interactions with others. Rate primarily on the basis of patient report. Patients with mild asociality may not initiate social contact with others but do respond to overtures by others. In more severe cases, patients avoid social contact with others.

0 = No evidence of lack of sociability.
1 = Questionable decrease.
2 = Mild. Reports some difficulty initiating social interactions but usually welcomes overtures by others.
3 = Moderate. Rarely initiates social activities but sometimes responds to overtures by others.
4 = Marked. Rarely initiates social activities; avoids being with others unless prodded by others.
5 = Severe. Avoids being with others whenever possible.

19. _____ Anhedonia

Patients with anhedonia have loss of interest in initiating pleasurable activities or, in more severe cases, lose the ability to experience pleasure when participating in activities normally considered pleasurable.

Psychiatric patients frequently have significant financial restraints on the recreational activities in which they may engage. These restrictions should be taken into account in rating anhedonia.

0=No evidence of anhedonia; seeks out pleasurable opportunities available to him/her and reports enjoyment of activities he/she engages in.
1 = Questionable decrease.
2 = Mild. Does not usually initiate pleasurable activities but often participates in what is offered and enjoys it.
3 = Moderate. Has to be encouraged to participate in pleasurable activities and/or sometimes does not enjoy otherwise pleasurable activities.
4 = Marked. Usually does not participate in activities and reports little enjoyment or activities.
5 = Severe. Reports total inability to enjoy activities.

20. _____ Decreased Sexual Interest and Activity

The patient may show a decrement in sexual interest and/or activity. Rate upon the basis of expressed interest and activities engaged by patient given the patient's environment and social and cultural background.

0 = No evidence of decreased sexual interest or activity.
1 = Questionable decrease.
2 = Mild. Reports some diminished interest in sex but does pursue some sexual activity.
3 = Moderate. Expresses interest in sex but little or no pursuit of sexual activity.
4 = Marked. Reports little interest in sex and does not pursue sexual activity.
5 = Severe. Reports no interest in sex and no sexual activity.

21. _____ Ability to Feel Intimacy and Closeness

The patient may be unable to form close and emotionally intimate relationships. The core feature to be rated is the degree to which patients can confide with others their feelings, goals, problems, or other important aspects of their lives. This should be distinguished from patients who may be superficially sociable without being close to others.

0 = Consistently maintains a close relationship with at least one family member/spouse and at least one person outside family.
1 = Questionable decrease.
2 = Mild. Consistently maintains a close relationship with either a family member or one person outside the family.
3 = Moderate. Sometimes is able to be close to a family member or someone outside the family.
4 = Marked. Rarely is able to be close to others.
5 = Severe. Has no close relationships with family or people outside the family.

22. _____ Global Rating of Asociality-Anhedonia

The global rating should reflect the overall severity of the asocial-anhedonic symptoms.

0 = No asociality-anhedonia.
1 = Questionable asociality-anhedonia.
2 = Mild asociality-anhedonia.
3 = Moderate asociality-anhedonia.
4 = Marked asociality-anhedonia.
5 = Severe asociality-anhedonia.

Appendix C

MPRC BRIEF PSYCHIATRIC RATING SCALE ANCHORS

Introduce all questions with "During the past week have you..."

*Ratings based primarily upon verbal report.

1. SOMATIC CONCERN: Degree of concern over present bodily health. Rate the degree to which physical health is perceived as a problem by the patient, whether complaints have a realistic basis or not. Do not rate mere reporting of somatic symptoms. Rate only concern for (or worrying about) physical problems (real or imagined). Rate on the basis of reported (i.e., subjective) information pertaining to the past week.

   1 - Not reported

   2 - Very Mild: occasionally is somewhat concerned about body, symptoms, or physical illness

   3 - Mild: occasionally is moderately concerned, or often is somewhat concerned

   4 - Moderate: occasionally is very concerned, or often is moderately concerned

   5 - Moderately Severe: often is very concerned

   6 - Severe: is very concerned most of the time

   7 - Very Severe: is very concerned nearly all of the time

   9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

2. ANXIETY: Worry, fear, or over concern for present or future. Rate solely on the basis of verbal report of patients's own subjective experience pertaining to the past week. Do not infer anxiety from physical signs or from neurotic defense mechanisms. Do not rate if restricted to somatic concern. If anxious about a delusion, rate degree of anxiety on this item.

   1 - Not reported

   2 - Very Mild: occasionally feels somewhat anxious

   3 - Mild: occasionally feels moderately anxious, or often feels somewhat anxious

   4 - Moderate: occasionally feels very anxious, or often feels moderately anxious

   5 - Moderately Severe: often feels very anxious

   6 - Severe: feels very anxious most of the time

   7 - Very Severe: feels very anxious nearly all of the time

   9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

3. EMOTIONAL WITHDRAWAL: Deficiency in relating to the interviewer and to the interview situation. Overt manifestations of this deficiency include poor/absence of eye contact, failure to orient oneself physically toward the interviewer, and a general lack of involvement or engagement in the interview. Distinguish from BLUNTED AFFECT, in which deficits in facial expression,

body gesture, and voice pattern are scored. Rate on the basis of observations made during the interview.

1 - Not observed

2 - Very Mild: e.g., occasionally exhibits poor eye contact

3 - Mild: e.g., as above, but more frequent

4 - Moderate: e.g., exhibits little eye contact, but still seems engaged in the interview and is appropriately responsive to all questions

5 - Moderately Severe: e.g., stares at floor or orients self away from interviewer, but still seems moderately engaged

6 - Severe: e.g., as above, but more persistent or pervasive

7 - Very Severe: e.g., appears "spacey" or "out of it" (total absence of emotional relatedness), and is disproportionately uninvolved or unengaged in the interview. (DO NOT SCORE IF EXPLAINED BY DISORIENTATION.)

4. CONCEPTUAL DISORGANIZATION: Degree of speech incomprehensibility. Include any type of formal thought disorder (e.g., loose associations, incoherence, flight of ideas, neologisms). DO NOT include mere circumstantiality or pressured speech, even if marked. DO NOT rate on the basis of the patient's subjective impressions (e.g., "my thoughts are racing. I can't hold a thought," "my thinking gets all mixed up"). Rate ONLY on the basis of observations made during the interview.

1 - Not observed

2 - Very Mild: e.g., somewhat vague, but of doubtful clinical significance

3 - Mild: e.g., frequently vague, but the interview is able to progress smoothly; occasional loosening of associations

4 - Moderate: e.g., occasional irrelevant statements, infrequent use of neologisms, or moderate loosening of associations

5 - Moderately Severe: as above, but more frequent

6 - Severe: formal thought disorder is present for most of the interview, and the interview is severely strained

7 - Very Severe: very little coherent information can be obtained

5. GUILT FEELINGS: Over concern or remorse for past behavior. Rate on the basis of the patient's subjective experiences of guilt as evidenced by verbal report pertaining to the past week. Do not infer guilt feelings from depression, anxiety or neurotic defenses.

1 - Not reported

2 - Very Mild: occasionally feels somewhat guilty

3 - Mild: occasionally feels moderately guilty, or often feels somewhat guilty

4 - Moderate: occasionally feels very guilty, or often feels moderately guilty

5 - Moderately Severe: often feels very guilty

6 - Severe: feels very guilty most of the time, or encapsulated delusion of guilt

7 - Very Severe: agonizing constant feelings of guilt, or pervasive delusion(s) of guilt

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or Not assessed

6. TENSION: Rate motor restlessness (agitation) observed during the interview. DO NOT rate on the basis of subjective experiences reported by the patient. Do not rate movements of tardive dyskinesia.

1 - Not observed

2 - Very Mild: e.g., occasionally fidgets

3 - Mild: e.g., frequently fidgets

4 - Moderate: e.g., constantly fidgets, or frequently fidgets, wrings hands and pulls clothing

5 - Moderately Severe: e.g., constantly fidgets, wrings hand and pulls clothing

6 - Severe: e.g., cannot remain seated (i.e., must pace)

7 - Very Severe: e.g., paces in a frantic manner

7. MANNERISMS AND POSTURING: Unusual and unnatural motor behavior. Rate only abnormality of movements. Do not rate simple heightened motor activity here. Consider frequency, duration, and degree of bizarreness. Do not rate movements of tardive dyskinesia.

1 - Not observed

2 - Very Mild: odd behavior but of doubtful clinical significance, e.g., occasional unprompted smiling, infrequent lip movements

3 - Mild: strange behavior but not obviously bizarre, e.g., infrequent head-tilting (side to side) in a rhythmic fashion, intermittent abnormal finger movements

4 - Moderate: e.g., assumes unnatural position for a brief period of time, infrequent tongue protrusions, rocking, facial grimacing

5 - Moderately Severe: e.g., assumes and maintains unnatural position throughout interview, unusual movements in several body areas

6 - Severe: as above, but more frequent, intense, or pervasive

7 - Very Severe: e.g., bizarre posturing throughout most of the interview, continuous abnormal movements in several body areas

8. GRANDIOSITY: Inflated self-esteem (self-confidence), or inflated appraisal of one's talents, powers, abilities, accomplishments, knowledge, importance, or identity. Do not socre mere grandiose quality of claims (e.g., "I'm the worse sinner in the world," "The entire country is trying to kill me") unless the guilt/persecution is related to some special, exaggerated attributes of the individual. Also, the patient must claim exaggerated attributes: e.g., if patient denies talents, powers, etc., even if he or she states that others indicate that he/she has these attributes, this item should not be scored. Rate on the basis of reported (i.e., subjective) information pertaining to the past week.

1 - Not reported

2 - Very Mild: e.g., is more confident than most people, but of only possible clinical significance

3 - Mild: e.g., definitely inflated self-esteem or exaggerates talents somewhat out of proportion to the circumstances

4 - Moderate: e.g., inflated self-esteem clearly out of proportion to the circumstances, or suspected grandiose delusion(s)

5 - Moderately Severe: e.g., a single (definite) encapsulated grandiose delusion, or multiple (definite) fragmentary grandiose delusions

6 - Severe: e.g., a single (definite) grandiose delusion/delusional system, or multiple (definite) grandiose delusions that seem to preoccupy the patient

7 - Very Severe: e.g., as above, but nearly all conversation is directed towards the patient's grandiose delusion(s)

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

9. DEPRESSIVE MOOD: Subjective report of feeling depressed, blue, "down in the dumps," etc. Rate only degree of reported depression. Do not rate on the basis of inferences concerning depression based upon general retardation and somatic complaints. Rate on the basis of reported (i.e., subjective) information pertaining to the past week.

1 - Not reported

2 - Very Mild: occasionally feels somewhat depressed

3 - Mild: occasionally feels moderately depressed, or often feels somewhat depressed

4 - Moderate: occasionally feels very depressed, or often feels moderately depressed

5 - Moderately Severe: often feels very depressed

6 - Severe: feels very depressed most of the time

7 - Very Severe: feels very depressed nearly all of the time

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

10. HOSTILITY: Animosity, contempt, belligerence, disdain for other people outside the interview situation. Rate solely on the basis of the verbal report of feelings and actions of the patient toward others during the past week. Do not infer hostility from neurotic defenses, anxiety or somatic complaints.

1 - Not reported

2 - Very Mild: occasionally feels somewhat angry

3 - Mild: often feels somewhat angry, or occasionally feels moderately angry

4 - Moderate: occasionally feels very angry, or often feels moderately angry

5 - Moderately Severe: often feels very angry

6 - Severe: has acted on his anger by becoming verbally or physically abusive on one or two occasions

7 - Very Severe: has acted on his anger on several occasions

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

11. SUSPICIOUSNESS: Belief (delusional or otherwise) that others have now, or have had in the past, malicious or discriminatory intent toward the patient. On the basis of verbal report, rate only those suspicions which are currently held whether they concern past or present circumstances. Rate on the basis of reported (i.e., subjective) information pertaining to the past week.

1 - Not reported

2 - Very Mild: rare instances of distrustfulness which may or may not be warranted by the situation

3 - Mild: occasional instances of suspiciousness that are definitely not warranted by the situation

4 - Moderate: more frequent suspiciousness, or transient ideas of reference

5 - Moderately Severe: pervasive suspiciousness, frequent ideas of reference, or an encapsulated delusion

6 - Severe: definite delusion(s) of reference or persecution that is (are) not wholly pervasive (e.g., an encapsulated delusion)

7 - Very Severe: as above, but more widespread, frequent, or intense

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

12. HALLUCINATORY BEHAVIOR: Perceptions (in any sensory modality) in the absence of an identifiable external stimulus. Rate only those experiences that have occurred during the last week. DO NOT rate "voices in my head," or visions in my mind" unless the patient can differentiate between these experiences and his or her thoughts.

1 - Not reported

2 - Very Mild: suspected hallucinations only

3 - Mild: definite hallucinations, but insignificant, infrequent, or transient (e.g., occasional formless visual hallucinations, a voice calling the patient's name)

4 - Moderate: as above, but more frequent or extensive (e.g., frequently sees the devil's face, two voices carry on lengthy conversations)

5 - Moderately Severe: hallucinations are experienced nearly every day, or are a source of extreme distress

6 - Severe: as above, and has had a moderate impact on the patient's behavior (e.g., concentration difficulties leading to impaired work functioning)

7 - Very Severe: as above, and has had a severe impact (e.g., attempts suicide in response to command hallucinations)

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

13. MOTOR RETARDATION: Reduction in energy level evidenced in slowed movements. Rate on the basis of the behavior of the patient only. Do not rate on the basis of the patient's subjective impression of his own energy level.

1 - Not observed

2 - Very Mild and of doubtful clinical significance

3 - Mild: e.g., conversation is somewhat retarded, movements somewhat slowed

4 - Moderate: e.g., conversation is noticeably retarded but not strained

5 - Moderately Severe: e.g., conversation is strained, moves very slowly

6 - Severe: e.g., conversation is difficult to maintain, hardly moves at all

7 - Very Severe: e.g., conversation is almost impossible, does not move at all throughout the interview

14. UNCOOPERATIVENESS: Evidence of resistance, unfriendliness, resentment, and lack of readiness to cooperate with the interviewer. Rate only on the basis of the patient's attitude and responses to the interviewer and the interview situation. Do not rate on the basis of reported resentment or uncooperativeness outside the interview situation.

1 - Not observed

2 - Very Mild: e.g., does not seem motivated

3 - Mild: e.g., seems evasive in certain areas

4 - Moderate: e.g., monosyllabic, fails to elaborate sponeaneously, somewhat unfriendly

5 - Moderately Severe: e.g., expresses resentment and is unfriendly throughout the interview

6 - Severe: e.g., refuses to answer a number of questions

7 - Very Severe: e.g., refuses to answer most questions

15. UNUSUAL THOUGHT CONTENT: Severity of delusions of any type. Consider conviction and effect on actions. Assume full conviction if patient has acted on his or her beliefs. Rate on the basis of reported (i.e., subjective) information pertaining to past week.

1 - Not reported

2 - Very Mild: delusion(s) suspected or likely

3 - Mild: at times, patient questions his or her belief(s) (partial delusion)

4 - Moderate: full delusional conviction, but delusion(s) has little or no influence on behavior

5 - Moderately Severe: full delusional conviction, but delusion(s) has only occasional impact on behavior

6 - Severe: delusion(s) has significant effect, e.g., neglects responsibilities because of preoccupation with belief that he/she is God

7 - Very Severe: delusion(s) has major impact, e.g., stops eating because believes food is poisoned

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

16. BLUNTED AFFECT: Diminished affective responsivity, as characterized by deficits in facial expression, body gestures and voice pattern. Distinguish from EMOTIONAL WITHDRAWAL, in which the focus is on interpersonal impairment rather than affect. Consider degree and consistency of impairment. Rate based on observations made during interview.

1 - Not observed

2 - Very Mild: e.g., occasionally seems indifferent to material that is usually accompanied by some show of emotion

3 - Mild: e.g., somewhat diminished facial expression, or somewhat monotonous voice or somewhat restricted gestures

4 - Moderate: e.g., as above, but more intense, prolonged, or frequent

5 - Moderately Severe: including at least two of the three features: severe lack of facial expression, monotonous voice, or restricted body gestures

6 - Severe: e.g., profound blunting of affect

7 - Very Severe: e.g., totally monotonous voice, and total lack of expressive gestures throughout the evaluation

17. EXCITEMENT: Heightened emotional tone, including irritability and expansiveness (hypomanic affect). Do not infer affect from statements of grandiose delusions. Rate based on observations made during interview.

1 - Not observed

2 - Very Mild and of doubtful clinical significance

3 - Mild: e.g., irritable or expansive at times

4 - Moderate: e.g., frequently irritable or expansive

5 - Moderately Severe: e.g., constantly irritable or expansive; or, at times, enraged or euphoric

6 - Severe: e.g., enraged or euphoric throughout most of the interview

7 - Very Severe: e.g., as above, but to such a degree that the interview must be terminated prematurely

18. DISORIENTATION: Confusion or lack of proper association for person, place or time. Rate based on observations made during interview.

1 - Not observed

2 - Very Mild: e.g., seems somewhat confused

3 - Mild: e.g., indicated 1982 when, in fact, it is 1983

4 - Moderate: e.g., indicates 1978

5 - Moderately Severe: e.g., is unsure where he/she is

6 - Severe: e.g., has no idea where he/she is

7 - Very Severe: e.g., does not know who he/she is

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

POVERTY OF SPEECH: A restriction in the amount of spontaneous speech, i.e., conversation and answers to questions are either brief or unelaborated. Meaningful information is rarely provided.

1 - Not observed

2 - Very Mild: Questionable

3 - Mild: Occasional replies do not include elaborated information even when this is appropriate

4 - Moderate: As above, but more frequently replies do not include elaborated information or occasional replies are monosyllabic or brief

5 - Moderately Severe: At least half of the patients' replies are monosyllabic or brief

6 - Severe: Most answers are rarely more than a few words in length, and occasionally questions may be left unanswered

7 - Very Severe: Patients' answers are either monosyllabic or she/he fails to answer questions

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

20. INAPPROPRIATE AFFECT: Affect expressed is inappropriate or incongruous with the context of the situation. Most typically, this manifestation of affective disturbance takes the form of smiling or assuming a silly facial expression while talking about a serious or sad subject.

1 - Not observed

2 - Very Mild: Questionable

3 - Mild: At least one clear instance of inappropriate smiling or other inappropriate affect

4 - Moderate: At least two instances of inappropriate affect

5 - Moderately Severe: Occasional to frequent instances of inappropriate affect

6 - Severe: Frequent instances of inappropriate affect

7 - Very Severe: Affect is inappropriate most of the time

9 - Cannot be assessed adequately because of severe formal thought disorder, uncooperativeness, or marked evasiveness/guardedness; or not assessed

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