Title

Protocol for a Scoping/Systematic Review: Pediatric Psychosis Measurement Instruments: A Systematic Review

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Authors

Bhatt, Apurva, MD
Elberg, Zhanna, MD
Fausak, Erik Davis, MSLIS
et al.

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Supplemental Material

https://escholarship.org/uc/item/08j8s3qf#supplemental

Data Availability

The data associated with this publication are within the manuscript.

Protocol for a Scoping/Systematic Review:

Pediatric Psychosis Measurement Instruments: A Systematic Review

Authors: Apurva Bhatt MD[1], Zhanna Elberg MD[2], Erik Fausak[1], Craigan Usher MD[3], Tushita Mayanil MD[4], Kristen A Woodberry[5], Ellen H Steele PhD[6], Tara Rezza PsyD[7], Zenette McCoy[8], Nitasha Sharma[1], Adrienne Maguire MD[1], Mark Savill PhD[1]

[1] University of California Davis

[2] University at Buffalo Jacobs School of Medicine, Buffalo, NY; Department of Psychiatry

[3] Oregon Health and Science University

[4] University of Pittsburgh

[5] Maine Health Institute of Research, MaineHealth, Scarborough, ME; Psychiatry Department, Tufts School of Medicine

[6] Western Kentucky University

[7] John R. Oishei Children's Hospital, Buffalo, NY; Department of Psychiatry

[8] Oregon Health and Science University, Portland, OR; Department of Psychiatry

Correspondence: Apurva Bhatt M.D., apurva.p.bhatt@gmail.com

Abstract:

Background:

Approximately 17% of children (ages 9-12 years old) and 7.5% of adolescents (ages 13-18 years old) report psychotic symptoms.[1] Although many children report symptoms of psychosis, few go on to develop a DSM-5 psychotic illness.[2] Psychosis symptoms in children can occur on a diagnostic spectrum from psychotic-like-experiences, to Attenuated Psychosis Syndrome, to a DSM-5-TR Schizophrenia Spectrum related disorder. Clinicians assessing children and adolescents who report symptoms of psychosis must take into account the developmental age and other factors (including environment, culture and language).

While measurement tools of psychosis in adults have been well established, such tools for pediatric patients are less well established and researched. For example, in 2016, the National Institutes of Mental Health published the PhenX Early Psychosis Specialty Collection, which includes psychosis measurement instruments.[3,4] Many of the measures in this collection require specialized training or are not applicable to the pediatric population presenting with symptoms of psychosis.

Objectives:

This systematic review aims to answer two questions::

1) What measurement instruments are most effective in assessing symptoms of psychosis (positive, negative, cognitive symptoms) in pediatric patients 18 years of age and younger?
2) What measures of relevant outcomes (functioning, quality of life, suicide risk, and medication adherence) are appropriate for use with pediatric patients experiencing psychosis?

We aim to provide a guide to clinicians who encounter children and adolescents presenting with symptoms of psychosis, so that they can make decisions about which tool to use for pediatric psychosis screening vs diagnostic vs symptom tracking vs outcome tracking over time.

Design:

A systematic search strategy will be used to identify and select relevant articles. The PsycInfo, Scopus, and Medline databases will be searched from 1962 (when the BPRS was published) until current (with no cutoff date for results). Manual searches will not be performed. Key articles were identified by the Principal Investigator and team members, and keywords were mined by finding references in PubMed and APA PsycInfo. Keywords were collected and compared with keywords already utilized. [Yale MeSH analyzer](#) was utilized to compare common Medical Subject Headings across articles. [SR-Accelerator](#) was also used to assess functionality of search terms and refine strategy.

Articles identified in the search will first undergo title and abstract screening using COVIDENCE. In the title abstract screening phase, a total of eight reviewers will conduct the initial title abstract screening, with two individuals reviewing each title/abstract blinded to each other's response. Three arbitrators will resolve disagreements. Articles identified will then undergo full text review and will be assessed for eligibility, at which point a decision will be made for inclusion in the review.

Registration: This has been submitted to PROSPERO on this date, and eScholarship, University of California (https://escholarship.org/) on this 17 February 2023.

Amendments from Original Protocol:

No amendments have been made to the original protocol.

Introduction

Rationale

Describe this protocol in context of what is already known.

Approximately 17% of children (ages 9-12 years old) and 7.5% of adolescents (ages 13-18 years old) report psychotic symptoms.[1] Although many children report symptoms of psychosis, few go on to develop a DSM-5 psychotic illness.[2] Psychosis symptoms in children can occur on a diagnostic spectrum from psychotic-like-experiences, to Attenuated psychosis syndrome, to a DSM-5-TR Schizophrenia Spectrum related disorder. Clinicians assessing children and adolescents who report symptoms of psychosis must take into account the developmental age and other factors (including environment, culture and language). While measurement tools of psychosis in adults have been well established, such tools for pediatric patients are less well established and researched. For example, in 2016, the National Institutes of Mental Health published the PhenX Early Psychosis Specialty Collection, which includes psychosis measurement instruments.[3,4] Many of the measures in this collection require specialized training or are not applicable to the pediatric population presenting with symptoms of psychosis.

Clinicians working with children or adolescents who present with psychosis symptoms may lack confidence in assessment due to lack of special training or clinical application of the measurement.[6] This might be partially attributable due to the fact that early psychosis symptoms (symptoms that occur before an individual is diagnosed with a condition like Schizophrenia), were not well-characterized until recent years. Attenuated psychosis syndrome (APS) first appeared in the DSM-5 in the section for "conditions for further study" in 2013.[7] It wasn't until the newly published DSM-5-TR where APS was formally included under "Other Specified Schizophrenia Spectrum and Other Psychotic Disorder."[8] Thus, clinicians who completed their training before 2013 may not have received specialized training in assessment of psychosis symptoms in pediatric patients.

Objectives

This systematic review aims to answer two questions:

3) What measurement instruments are most effective in assessing symptoms of psychosis (positive, negative, cognitive symptoms) in pediatric patients 18 years of age and younger?

4) What measures of relevant outcomes (functioning, quality of life, suicide risk, and medication adherence) are appropriate for use with pediatric patients experiencing psychosis?

We aim to provide a guide to clinicians who encounter children and adolescents presenting with symptoms of psychosis, so that they can make decisions about which tool to use for pediatric psychosis screening vs diagnostic vs symptom tracking vs outcome tracking over time.

Methods

Eligibility Criteria:

Study Designs:

All articles, published from 1962 (when the BPRS was published) to 2022, in all languages that are translatable using Google Translate will be included. Google Translate is a viable tool that can help promote inclusion of studies in systematic reviews by providing free, reliable translation services.[9]

Participants:

Psychometric measurement instrument validation studies including individuals 18 years and younger who are being assessed for or have a diagnosis of any of the following: hallucinations, perceptual disturbance, ideational disturbance, delusions, psychotic like-experiences, clinical high risk for psychosis, ultra-high risk for psychosis, genetic risk deterioration syndrome, attenuated psychosis syndrome, prodrome, other specified schizophrenia spectrum disorder, Schizophreniform disorder, Schizophrenia spectrum disorder, and Schizoaffective disorder.

Interventions and Comparators:

Identifying the best measurement instrument compared to other instruments that allow for measurement of pediatric psychosis.

Outcomes:

We will produce a table including but not limited to the following information: each measurement instrument's psychometric properties, diagnostic accuracy, intended setting, intended participants, availability across language, cost considerations, training requirements, and issues regarding administration.

Information Sources:

PRISMA-S Template (based on v1.0 retrieved from https://osf.io/2ybwn/)

Databases and Interfaces Searched:

Database	Interface	Date Coverage	Date Searched
PsycInfo	Proquest	1910 to Present	17 December 2022 Added filters school-aged (6-12 yrs) and Preschool (2-5 yrs) on 3 February 2023
Medline (Included products: Medline, in process citations, "ahead of print" citations, out-of-scope citations, journals indexing prior to medline inclusion, pre-1966 citations, PubMed Central, author manuscripts NIH funding, NCBI Bookshelf)	PubMed	1946 to Present	17 December 2022
Scopus	Scopus	1823 to Present	17 December 2022

Simultaneous Searches:
None Performed

Item 2: Other Online Resources (As Needed):
Not Used

Manual Searching (searching relevant journals Table of Contents): Not Performed

Citation Searching And Text Analysis:

Article Citation:
Tiffin PA, Paton LW. The psychometrics of psychosis - assessing and rating perceptual and ideational disturbance in adolescents. *Child Adolesc Ment Health*. 2019;24(2):176-186. doi:10.1111/camh.12312
Maijer K, Hayward M, Fernyhough C, et al. Hallucinations in Children and Adolescents: An Updated Review and Practical Recommendations for Clinicians. *Schizophr Bull*. 2019;45(45 Suppl 1):S5-S23. doi:10.1093/schbul/sby119
Karcher NR, Barch DM, Avenevoli S, et al. Assessment of the Prodromal Questionnaire-Brief Child Version for Measurement of Self-reported Psychoticlike Experiences in Childhood. *JAMA Psychiatry*. 2018;75(8):853-861. doi:10.1001/jamapsychiatry.2018.1334

Process: Key articles were identified by Principal Investigator and keywords were mined by finding references in PubMed and APA PsycInfo. Keywords were collected and compared with keywords already utilized. Yale MeSH analyzer was utilized to compare common Medical Subject Headings across articles. SR-Accelerator was also used to assess functionality of search terms and refine strategy.

Contacts (Researchers contacted for additional information): Not performed

Process: N/A

Additional Methodologies Not Listed Above: Not Performed

Process: Not Applicable

Limits and Restrictions

Date and Time Period: 1962 (BPRS came out) - current

Language: any
Publication status: Published in a peer review journal

Species Included: Humans only, under 18 years old.

Study Design: All study types suggested (Reviews for snowball)

Database Subset: Not Applied

Pre-specified cut-off or saturation point for results: Not applied

Other Restrictions: Not Applied

Search Filters:

Database	Interface	Search Filters Applied
PsycInfo	ProQuest	Adolescent, School and Pre-school (age groups) and Peer Reviewed Literature and Human population
Medline	PubMed	Human only filter
Scopus	Elsevier	Human only, and articles

Full Search Strategy:

Search:
Search Database:Pubmed

Search ID	Terms (copy and paste)	Results
#1 17 year	"Adolescent"[Mesh] OR "Child"[Mesh] OR "child"[tiab]	4,306,00

old and younger	OR "Adolescent"[tiab] OR "teen"[tiab] OR "teenage"[tiab] OR "teenager"[tiab] OR "age effect"[tiab] OR "Age Factors"[Mesh] OR "youth*"[tiab] OR "TAY"[tiab] OR "young adult*"[tiab] OR "emerging adult*"[tiab] OR "Pediatrics"[Mesh] OR pediatric[tiab] OR pediatrics[tiab] OR "paediatric"[tiab] OR "paediatrics"[tiab] OR "childhood"[tiab] OR "children"[tiab] OR "juvenile*"[tiab]	9
#2 Schizophrenia and psychosis	("Schizophrenia"[Mesh] OR "schizophren*"[tiab] OR "Dementia Praecox"[tiab]) OR ("Psychotic Disorders"[Mesh] OR "psychosis"[tiab] OR "psychoses"[tiab] OR "psychotic"[tiab] OR "schizoaffective"[tiab] OR "schizophreniform"[tiab] OR "hallucination"[tiab] OR "hallucinations"[tiab] OR "perceptual disturbance*"[tiab] OR "ideational disturbance*"[tiab] OR "ideation disturbance*"[tiab] OR "clinical high risk for psychosis"[tiab] OR "ultra high risk for psychosis"[tiab] OR "ultra-high risk for psychosis"[tiab] OR "ultra-high-risk for psychosis"[tiab] OR "prodrome"[tiab] OR ("ARMS"[tiab] and "psycho*"[tiab])OR "At-risk mental state"[tiab] OR "at risk mental state"[tiab] OR (("GRD"[tiab] OR "GRDS"[tiab]) AND "psycho*"[tiab]) OR "genetic risk deterioration syndrome"[tiab])	234,534
#3 psychometrics	("Functioning"[tiab] OR "quality of life"[tiab] OR "recovery"[tiab] OR "recovery"[tiab] OR "medication side effects"[tiab] OR "family functioning"[tiab] OR "social occupational functioning"[tiab] OR "suicide risk"[tiab] OR "cognition"[tiab] OR "medication adherence"[tiab] OR "Suicide/prevention and control"[Mesh] OR "Quality of Life/psychology"[Mesh]) OR ("Psychometrics"[Mesh] OR "psychometric*"[tiab] OR "Symptom Assessment"[Mesh] OR "Psychiatric Status Rating Scales"[Mesh] OR "assessment*"[tiab] OR "Positive and Negative Syndrome Scale"[tiab] OR "PANSS"[tiab] OR	2,537,005

"Comprehensive Assessment for At-Risk Mental States"[tiab] OR "CAARMS"[tiab] OR "Neuropsychological Tests"[Mesh] OR "neuropsychological test"[tiab] OR "neuropsychological tests"[tiab] OR "SIPS"[tiab] OR "structured interview for psychosis-risk syndromes"[tiab] OR "structured interview for psychosis risk syndromes"[tiab] OR "prodromal questionnaire-Brief child version"[tiab] OR "prodromal questionnaire brief child syndrome"[tiab] OR "PQB"[tiab] OR "PRIME screen-Revised"[tiab] OR "SCID-5"[tiab] OR "SCID 5"[tiab] OR "ARMS lit"[tiab] OR "Structured clinical interview disorder"[tiab] OR "ARMS lit"[tiab] OR "BPRS"[tiab] OR "brief psychosis rating scale"[tiab] OR "modified colorado symptom index"[tiab] OR "schizophrenia proneness instrument-child and youth version"[tiab] OR "schizophrenia proneness instrument child and youth version"[tiab] OR "SPI-CY"[tiab] OR "Bonn Scale for the Assessment of Basic Symptoms"[tiab] OR "BSAPS"[tiab] OR "BSABS-P"[tiab] OR "KSADS"[tiab] OR "K-SADS"[tiab] OR "Kiddie Schedule for Affective Disorders and Schizophrenia"[tiab] OR "basel screening instrument for psychosis"[tiab] OR "BSIP"[tiab] OR "PRIME screen"[tiab] OR "Mini-SIPS"[tiab] OR "Min-sips"[tiab] OR "BNSS"[tiab] OR "brief negative symptom scale"[tiab] OR "NSA-16"[tiab] OR "Negative Symptoms Assessment-16"[tiab] OR "Clinical Assessment Interview for Negative Symptoms"[tiab] OR "CAINS"[tiab] OR "Clinical Global Impression of Schizophrenia"[tiab] OR "CGI-SCH"[tiab] OR "QSANS/QSAPS"[tiab] OR "SANS/SAPS"[tiab] OR "Y-PARQ"[tiab] OR "Brief Symptom Inventory"[tiab] OR "Child Behavioral Checklist"[tiab] OR "Behavior assessment system for children"[tiab] OR "Minnesota multiphasic Personality inventory-Adolescent"[tiab] OR "MMPI-A"[tiab] OR "Millon Adolescent Clinical Inventory"[tiab] OR "MACI"[tiab] OR "Rorschach"[tiab] OR "TEMAS"[tiab] OR "Thematic Apperception

	Test"[tiab]	
#4 Validation	"Validation Study" [Publication Type] OR "invariant analysis"[tiab] OR "valid*"[tiab] OR "Psychiatric Status Rating Scales/standards"[Mesh] OR "Psychometrics/standards"[Mesh] OR "accuracy"[tiab] OR "sensitivity"[tiab] OR "specificity"[tiab] OR "reliab*"[tiab] OR "Sensitivity and Specificity"[Mesh]	3,092,690
#5	#1 AND #2 AND #3 AND #4	3.216
#6	#5 AND (humans[Filter])	3,072
Copy and Paste	(("Validation Study"[Publication Type] OR "invariant analysis"[Title/Abstract] OR "valid*"[Title/Abstract] OR "psychiatric status rating scales/standards"[MeSH Terms] OR "psychometrics/standards"[MeSH Terms] OR "accuracy"[Title/Abstract] OR "sensitivity"[Title/Abstract] OR "specificity"[Title/Abstract] OR "reliab*"[Title/Abstract] OR "Sensitivity and Specificity"[MeSH Terms]) AND ("Functioning"[Title/Abstract] OR "quality of life"[Title/Abstract] OR "recovery"[Title/Abstract] OR "recovery"[Title/Abstract] OR "medication side effects"[Title/Abstract] OR "family functioning"[Title/Abstract] OR "social occupational functioning"[Title/Abstract] OR "suicide risk"[Title/Abstract] OR "cognition"[Title/Abstract] OR "medication adherence"[Title/Abstract] OR "suicide/prevention and control"[MeSH Terms] OR "quality of life/psychology"[MeSH Terms] OR ("Psychometrics"[MeSH Terms] OR "psychometric*"[Title/Abstract] OR "Symptom Assessment"[MeSH Terms] OR "Psychiatric Status Rating Scales"[MeSH Terms] OR "assessment*"[Title/Abstract] OR "Positive and Negative Syndrome Scale"[Title/Abstract] OR "PANSS"[Title/Abstract] OR "CAARMS"[Title/Abstract]	*earliest record 1963

OR "Neuropsychological Tests"[MeSH Terms] OR "neuropsychological test"[Title/Abstract] OR "Neuropsychological Tests"[Title/Abstract] OR "SIPS"[Title/Abstract] OR "structured interview for psychosis-risk syndromes"[Title/Abstract] OR "structured interview for psychosis-risk syndromes"[Title/Abstract] OR "prodromal questionnaire-Brief child version"[Title/Abstract] OR "PQB"[Title/Abstract] OR "PRIME screen-Revised"[Title/Abstract] OR "scid 5"[Title/Abstract] OR "scid 5"[Title/Abstract] OR "BPRS"[Title/Abstract] OR "brief psychosis rating scale"[Title/Abstract] OR "modified colorado symptom index"[Title/Abstract] OR "SPI-CY"[Title/Abstract] OR "Bonn Scale for the Assessment of Basic Symptoms"[Title/Abstract] OR "BSAPS"[Title/Abstract] OR "BSABS-P"[Title/Abstract] OR "KSADS"[Title/Abstract] OR "K-SADS"[Title/Abstract] OR "Kiddie Schedule for Affective Disorders and Schizophrenia"[Title/Abstract] OR "BSIP"[Title/Abstract] OR "PRIME screen"[Title/Abstract] OR "Mini-SIPS"[Title/Abstract] OR "BNSS"[Title/Abstract] OR "brief negative symptom scale"[Title/Abstract] OR "NSA-16"[Title/Abstract] OR "Clinical Assessment Interview for Negative Symptoms"[Title/Abstract] OR "CAINS"[Title/Abstract] OR "CGI-SCH"[Title/Abstract] OR "SANS/SAPS"[Title/Abstract] OR "Y-PARQ"[Title/Abstract] OR "Brief Symptom Inventory"[Title/Abstract] OR "Child Behavioral Checklist"[Title/Abstract] OR "Behavior assessment system for children"[Title/Abstract] OR "Minnesota multiphasic Personality inventory-Adolescent"[Title/Abstract] OR "MMPI-A"[Title/Abstract] OR "Millon Adolescent Clinical Inventory"[Title/Abstract] OR "MACI"[Title/Abstract] OR "Rorschach"[Title/Abstract] OR "TEMAS"[Title/Abstract] OR "Thematic Apperception Test"[Title/Abstract])) AND ("Schizophrenia"[MeSH Terms] OR

| | "schizophren*"[Title/Abstract] OR "Dementia Praecox"[Title/Abstract] OR ("Psychotic Disorders"[MeSH Terms] OR "psychosis"[Title/Abstract] OR "psychoses"[Title/Abstract] OR "psychotic"[Title/Abstract] OR "schizoaffective"[Title/Abstract] OR "schizophreniform"[Title/Abstract] OR "hallucination"[Title/Abstract] OR "hallucinations"[Title/Abstract] OR "perceptual disturbance*"[Title/Abstract] OR "ideational disturbance*"[Title/Abstract] OR "clinical high risk for psychosis"[Title/Abstract] OR "ultra high risk for psychosis"[Title/Abstract] OR "ultra high risk for psychosis"[Title/Abstract] OR "ultra high risk for psychosis"[Title/Abstract] OR "prodrome"[Title/Abstract] OR ("ARMS"[Title/Abstract] AND "psycho*"[Title/Abstract]) OR "At-risk mental state"[Title/Abstract] OR "At-risk mental state"[Title/Abstract] OR (("GRD"[Title/Abstract] OR "GRDS"[Title/Abstract]) AND "psycho*"[Title/Abstract]))) AND ("Adolescent"[MeSH Terms] OR "Child"[MeSH Terms] OR "Child"[Title/Abstract] OR "Adolescent"[Title/Abstract] OR "teen"[Title/Abstract] OR "teenage"[Title/Abstract] OR "teenager"[Title/Abstract] OR "age effect"[Title/Abstract] OR "Age Factors"[MeSH Terms] OR "youth*"[Title/Abstract] OR "TAY"[Title/Abstract] OR "young adult*"[Title/Abstract] OR "emerging adult*"[Title/Abstract] OR "Pediatrics"[MeSH Terms] OR "pediatric"[Title/Abstract] OR "Pediatrics"[Title/Abstract] OR "paediatric"[Title/Abstract] OR "paediatrics"[Title/Abstract] OR "childhood"[Title/Abstract] OR "children"[Title/Abstract] OR "juvenile*"[Title/Abstract])) AND (humans[Filter]) | |

Search Database:Psycinfo

Search ID	Terms (copy and paste)	Results
#1 17 year old or younger	Use age filters Adolescence (13-17 Yrs) School (6-12 Yrs) and Pre-school (2-5 Yrs)	
#2 Schizophrenia	MJMAINSUBJECT.EXACT("Schizophrenia") OR MJMAINSUBJECT.EXACT("Psychosis") OR noft(schizophren* OR psychos* OR "first episode disorders" OR "borderline states" OR "Dementia Praecox" OR "Psychotic Disorders" OR psychosis OR psychoses OR psychotic OR schizoaffective OR schizophreniform OR hallucination OR hallucinations OR "perceptual disturbance*" OR "ideational disturbance*" OR "ideation disturbance*" OR "clinical high risk for psychosis" OR "ultra high risk for psychosis" OR "ultra-high risk for psychosis" OR "ultra-high-risk for psychosis" OR prodrome OR (ARMS AND psycho*) OR "at risk mental state" OR ((GRD OR GRDS) AND psycho*) OR "genetic risk deterioration syndrome") OR (MAINSUBJECT.EXACT("Paranoid Schizophrenia") OR MAINSUBJECT.EXACT("Positive and Negative Symptoms") OR MAINSUBJECT.EXACT("Psychosis") OR MAINSUBJECT.EXACT.EXPLODE("First Episode (Disorders)")) OR MJMAINSUBJECT.EXACT("Borderline States")	496,197
#3assessment	MAINSUBJECT.EXACT.EXPLODE("Psychological Assessment") OR MAINSUBJECT.EXACT.EXPLODE("Quality of Life") OR MAINSUBJECT.EXACT.EXPLODE("Suicidality") OR NOFT(Functioning OR "quality of life" OR recovery OR recovery OR "medication side effects" OR "family functioning" OR "social occupational functioning" OR "suicide risk" OR cognition OR "medication adherence" OR "Suicide/prevention and control" OR "Quality of Life/psychology" OR	1,169,057

| | "Symptom Assessment" OR "Psychiatric Status Rating Scales" OR assessment* OR "Positive and Negative Syndrome Scale" OR PANSS OR "Comprehensive Assessment for At-Risk Mental States" OR CAARMS OR "Neuropsychological Tests" OR "neuropsychological test" OR "neuropsychological tests" OR SIPS OR "structured interview for psychosis-risk syndromes" OR "structured interview for psychosis risk syndromes" OR "prodromal questionnaire-Brief child version" OR "prodromal questionnaire brief child syndrome" OR PQB OR "PRIME screen-Revised" OR SCID-5 OR "SCID 5" OR "ARMS lit" OR "Structured clinical interview disorder" OR "ARMS lit" OR BPRS OR "brief psychosis rating scale" OR "modified colorado symptom index" OR "schizophrenia proneness instrument-child and youth version" OR "schizophrenia proneness instrument child and youth version" OR SPI-CY OR "Bonn Scale for the Assessment of Basic Symptoms" OR BSAPS OR BSABS-P OR KSADS OR K-SADS OR "Kiddie Schedule for Affective Disorders and Schizophrenia" OR "basel screening instrument for psychosis" OR BSIP OR "PRIME screen" OR Mini-SIPS OR Min-sips OR BNSS OR "brief negative symptom scale" OR NSA-16 OR "Negative Symptoms Assessment-16" OR "Clinical Assessment Interview for Negative Symptoms" OR CAINS OR "Clinical Global Impression of Schizophrenia" OR CGI-SCH OR QSANS/QSAPS OR SANS/SAPS OR Y-PARQ OR "Brief Symptom Inventory" OR "Child Behavioral Checklist" OR "Behavior assessment system for children" OR "Minnesota multiphasic Personality inventory-Adolescent" OR MMPI-A OR "Millon Adolescent Clinical Inventory" OR MACI OR Rorschach OR TEMAS OR "Thematic Apperception Test") | |

#4	MJMAINSUBJECT.EXACT("Psychometrics") OR MJMAINSUBJECT.EXACT("Test Validity") OR NOFT("Validation Study" OR "invariant analysis" OR valid* OR accuracy OR sensitivity OR specificity OR reliab* OR "Sensitivity and Specificity")	618,513
#5	#1 AND #2 AND #3 AND #4 AND Human filter AND Limit to Peer Review	6,099 4.926
#6	#5 AND publication dates (1962-01-01 - 2022-12-31)	6,082 4,907
#6 copy and paste	(MJMAINSUBJECT.EXACT("Psychometrics") OR MJMAINSUBJECT.EXACT("Test Validity") OR NOFT("Validation Study" OR "invariant analysis" OR valid* OR accuracy OR sensitivity OR specificity OR reliab* OR "Sensitivity and Specificity")) AND (MAINSUBJECT.EXACT.EXPLODE("Psychological Assessment") OR MAINSUBJECT.EXACT.EXPLODE("Quality of Life") OR MAINSUBJECT.EXACT.EXPLODE("Suicidality") OR NOFT(Functioning OR "quality of life" OR recovery OR recovery OR "medication side effects" OR "family functioning" OR "social occupational functioning" OR "suicide risk" OR cognition OR "medication adherence" OR "Suicide/prevention and control" OR "Quality of Life/psychology" OR "Symptom Assessment" OR "Psychiatric Status Rating Scales" OR assessment* OR "Positive and Negative Syndrome Scale" OR PANSS OR "Comprehensive Assessment for At-Risk Mental States" OR CAARMS OR "Neuropsychological Tests" OR "neuropsychological test" OR "neuropsychological tests" OR SIPS OR "structured interview for psychosis-risk syndromes" OR "structured interview for psychosis risk syndromes" OR "prodromal questionnaire-Brief child version" OR "prodromal questionnaire brief child syndrome" OR PQB OR "PRIME screen-Revised" OR SCID-5 OR	

| | "SCID 5" OR "ARMS lit" OR "Structured clinical interview disorder" OR "ARMS lit" OR BPRS OR "brief psychosis rating scale" OR "modified colorado symptom index" OR "schizophrenia proneness instrument-child and youth version" OR "schizophrenia proneness instrument child and youth version" OR SPI-CY OR "Bonn Scale for the Assessment of Basic Symptoms" OR BSAPS OR BSABS-P OR KSADS OR K-SADS OR "Kiddie Schedule for Affective Disorders and Schizophrenia" OR "basel screening instrument for psychosis" OR BSIP OR "PRIME screen" OR Mini-SIPS OR Min-sips OR BNSS OR "brief negative symptom scale" OR NSA-16 OR "Negative Symptoms Assessment-16" OR "Clinical Assessment Interview for Negative Symptoms" OR CAINS OR "Clinical Global Impression of Schizophrenia" OR CGI-SCH OR QSANS/QSAPS OR SANS/SAPS OR Y-PARQ OR "Brief Symptom Inventory" OR "Child Behavioral Checklist" OR "Behavior assessment system for children" OR "Minnesota multiphasic Personality inventory-Adolescent" OR MMPI-A OR "Millon Adolescent Clinical Inventory" OR MACI OR Rorschach OR TEMAS OR "Thematic Apperception Test")) AND ([STRICT] MJMAINSUBJECT.EXACT("Schizophrenia") OR MJMAINSUBJECT.EXACT("Psychosis") OR noft(schizophren* OR psychos* OR "first episode disorders" OR "borderline states" OR "Dementia Praecox" OR "Psychotic Disorders" OR psychosis OR psychoses OR psychotic OR schizoaffective OR schizophreniform OR hallucination OR hallucinations OR "perceptual disturbance*" OR "ideational disturbance*" OR "ideation disturbance*" OR "clinical high risk for psychosis" OR "ultra high risk for psychosis" OR "ultra-high risk for psychosis" OR "ultra-high-risk for psychosis" OR prodrome OR (ARMS AND psycho*) OR "at risk mental state" OR | |

| | ((GRD OR GRDS) AND psycho*) OR "genetic risk deterioration syndrome") OR (MAINSUBJECT.EXACT("Paranoid Schizophrenia") OR MAINSUBJECT.EXACT("Positive and Negative Symptoms") OR MAINSUBJECT.EXACT("Psychosis") OR MAINSUBJECT.EXACT.EXPLODE("First Episode (Disorders)")) OR MJMAINSUBJECT.EXACT("Borderline States")) | |

Search Database: Scopus

Search ID	Terms (copy and paste)	Results
#1 tests	TITLE-ABS-KEY (functioning OR "quality of life" OR recovery OR recovery OR "medication side effects" OR "family functioning" OR "social occupational functioning" OR "suicide risk" OR cognition OR "medication adherence" OR psychometrics OR psychometric* OR "Symptom Assessment" OR "Psychiatric Status Rating Scales" OR assessment* OR "Positive and Negative Syndrome Scale" OR panss OR "Comprehensive Assessment for At-Risk Mental States" OR caarms OR "Neuropsychological Tests" OR "neuropsychological test" OR "neuropsychological tests" OR SIPS OR "structured interview for psychosis-risk syndromes" OR "structured interview for psychosis risk syndromes" OR "prodromal questionnaire-Brief child version" OR "prodromal questionnaire brief child syndrome" OR PQB OR "PRIME screen-Revised" OR SCID-5 OR "SCID 5" OR "ARMS lit" OR "Structured clinical interview disorder" OR "ARMS lit" OR BPRS OR "brief psychosis rating scale" OR "modified colorado symptom index" OR "schizophrenia proneness instrument-child and youth version" OR "schizophrenia proneness instrument child and youth version" OR SPI-CY OR "Bonn Scale for the Assessment of Basic Symptoms" OR BSAPS OR BSABS-P OR KSADS OR K-SADS OR "Kiddie Schedule for Affective Disorders and Schizophrenia" OR "basel screening instrument for psychosis" OR BSIP OR "PRIME screen" OR Mini-SIPS OR Min-sips OR BNSS OR "brief negative symptom scale" OR NSA-16 OR	6,829,423

	"Negative Symptoms Assessment-16" OR "Clinical Assessment Interview for Negative Symptoms" OR CAINS OR "Clinical Global Impression of Schizophrenia" OR CGI-SCH OR QSANS/QSAPS OR SANS/SAPS OR Y-PARQ OR "Brief Symptom Inventory" OR "Child Behavioral Checklist" OR "Behavior assessment system for children" OR "Minnesota multiphasic Personality inventory-Adolescent" OR MMPI-A OR "Millon Adolescent Clinical Inventory" OR MACI OR Rorschach OR TEMAS OR "Thematic Apperception Test")	
#2	TITLE-ABS-KEY (schizophren* OR "Dementia Praecox" OR "Psychotic Disorders" OR psychosis OR psychoses OR psychotic OR schizoaffective OR schizophreniform OR hallucination OR hallucinations OR "perceptual disturbance*" OR "ideational disturbance*" OR "ideation disturbance*" OR "clinical high risk for psychosis" OR "ultra high risk for psychosis" OR "ultra-high risk for psychosis" OR "ultra-high-risk for psychosis" OR prodrome OR (ARMS AND psycho*) OR "at risk mental state" OR ((GRD OR GRDS) AND psycho*) OR "genetic risk deterioration syndrome" OR "first episode disorders" OR "borderline states")	388,195
#3	TITLE-ABS-KEY ("Validation Study" OR "invariant analysis" OR valid* OR accuracy OR sensitivity OR specificity OR reliab* OR "Sensitivity and Specificity" OR psychometric*)	9,169,337
#4	TITLE-ABS-KEY (child OR adolescent* OR teen* OR teenage OR teenager OR youth* OR tay OR "young adult*" OR "emerging adult*" OR "Pediatrics" OR pediatric OR pediatrics OR paediatric OR paediatrics OR childhood OR children OR juvenile*)	5,776,411
#5	#1 AND #2 AND #3 AND #4 AND Limit to human AND articles	6,951

#6 copy and paste	(TITLE-ABS-KEY ("validation study" OR "invariant analysis" OR valid* OR accuracy OR sensitivity OR specificity OR reliab* OR "sensitivity and specificity" OR psychometric*)) AND (TITLE-ABS-KEY (child OR adolescent* OR teen* OR teenage OR teenager OR "age effect" OR youth* OR tay OR {young adult*} OR {emerging adult*})) AND (TITLE-ABS-KEY (schizophren* OR "dementia praecox" OR "psychotic disorders" OR psychosis OR psychoses OR psychotic OR schizoaffective OR schizophreniform OR hallucination OR hallucinations OR "perceptual disturbance*" OR "ideational disturbance*" OR "ideation disturbance*" OR "clinical high risk for psychosis" OR "ultra high risk for psychosis" OR "ultra-high risk for psychosis" OR "ultra-high-risk for psychosis" OR prodrome OR arms OR "at risk mental state" OR grd OR grds OR "genetic risk deterioration syndrome" OR "first episode disorders" OR "borderline states")) AND (TITLE-ABS-KEY (functioning OR "quality of life" OR recovery OR recovery OR "medication side effects" OR "family functioning" OR "social occupational functioning" OR "suicide risk" OR cognition OR "medication adherence" OR psychometrics OR psychometric* OR "symptom assessment" OR "psychiatric status rating scales" OR assessment* OR "positive and negative syndrome scale" OR panss OR "comprehensive assessment for at-risk mental states" OR caarms OR "neuropsychological tests" OR "neuropsychological test" OR "neuropsychological tests" OR sips OR "structured interview for psychosis-risk syndromes" OR "structured interview for psychosis risk syndromes" OR "prodromal questionnaire-brief child version" OR "prodromal questionnaire brief child syndrome" OR "scid 5" OR "arms lit" OR "structured clinical interview disorder" OR "arms lit" OR bprs OR "brief psychosis rating scale" OR "modified colorado symptom index" OR "schizophrenia proneness instrument child and youth version" OR "schizophrenia proneness instrument child and youth version" OR spi-cy OR "bonn scale for the assessment of basic symptoms" OR bsaps OR bsabs-p OR ksads OR "basel screening instrument for psychosis" OR bsip OR "prime screen" OR "mini	*no articles prior to 1965 in search

	sips" OR "min sips")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (EXACTKEYWORD , "Human"))	

Updates: Not Applicable.

Search Designers:
Information Specialists or Librarians involved in process were: Erik Fausak
Content experts to inform strategy: Apurva Bhatt,

Peer Review:
Validation of search was used with identification of 20 key articles to make sure they were retrieved.
Peer review by Systematic Review Service Team.

Total Records	Total Records after deduplication	Deduplication software/methodology
13033	11967	**SR Accelerator Deduplicator**
11946	11945	**Covidence**
4.907	1982	**Covidence (added PreSchool and school age filters in PsycInfo 3 Feb 2023)**
13,927		

Records Screened: 13,927

Study Records:

Records were deduplicated by SR Accelerator Deduplicator (Bond University, Australia) and uploaded into Covidence (Melbourne, Australia) for Title/Abstract and Full Text

Screening. Risk of Bias was conducted by using a modified template based on the COSMIN risk of bias tool and data was extracted in Microsoft Excel (Seattle, USA).

Selection Process:

In the title abstract screening phase, a total of eight reviewers will conduct the initial title abstract screening, with two individuals reviewing each title/abstract. Three arbitrators will resolve disagreements. Articles identified for inclusion will then undergo full text review and will be assessed for eligibility, at which point a decision will be made for inclusion in the review.

Inclusion Criteria:
Psychometric Validation study of
1) a screening or diagnosis tool for psychosis or psychosis symptoms
2) a tool measuring outcomes in psychosis (specifically regarding positive symptoms, negative symptoms, cognitive symptoms, and other outcomes including functioning, quality of life, suicide risk, and medication adherence)

Exclusion Criteria:
-Any study that does not include participants 18 years and under
-Any study that does not include validation of a psychometric measure
-The population specifically does NOT include individuals with psychosis or include a measure of psychotic like symptoms
-for papers in other languages: exclude if Google Translate is unable to translate the title/abstract appropriately

Data Collection Process:

Two to four researchers will each independently extract data from all included studies into a Microsoft Excel Spreadsheet. Any discrepancies will be resolved through consensus from the team of individuals conducting this systematic review.

Data regarding each measurement instrument's intended measurement (ex: diagnosis, symptom domain, outcome, etc), psychometric properties, diagnostic accuracy, intended setting, intended participants, availability across language, cost considerations, training requirements, and issues regarding administration will be extracted from each publication.

Outcomes and Prioritization:

A table will be created grouping each measurement instrument by intended use (ex: for screening, diagnosis, symptom tracking over time (positive, negative, cognitive symptoms), functioning, quality of life, suicide risk, and medication adherence). The table will include synthesized data regarding each measurement instrument's psychometric properties.

Risk of bias in Individual Studies:

We will use the COSMIN risk of bias tool.

Data Synthesis:

We will not be performing a meta-analysis.

Confidence in Cumulative Evidence:

We will use the COSMIN Risk of Bias tool to assess the quality of studies on reliability or measurement error of outcome measurement instruments (LB Mokkink, M Boers, CPM van der Vleuten, LM Bouter, J Alonso, DL Patrick, HCW de Vet, CB Terwee. COSMIN Risk of Bias tool to assess the quality of studies on reliability or measurement error of outcome measurement instruments: a Delphi study. BMC Medical Research Methodology. 2020;20(293).)

Discussion:

While measurement tools of psychosis in adults have been well established, such tools for pediatric patients are less well established and researched. This systematic review aims to identify which measurement tools are most effective at assessing psychosis in pediatric patients.

References:

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meta-analysis of population-based studies. *Psychological Medicine*. 2012;42(9):1857-1863. 10.1017/S0033291711002960

2. McClellan J. Psychosis in Children and Adolescence. *J Am Acad Child Adolesc Psychiatry*. 2018;57(5):308-312.https://doi.org/10.1016/j.jaac.2018.01.021

3. Hamilton CM, Strader LC, Pratt JG, et al. The PhenX Toolkit: get the most from your measures. *Am J Epidemiol*. 2011;174(3):253-260. 10.1093/aje/kwr193

4. Öngür D, Carter CS, Gur RE, Perkins D, Sawa A, Seidman LJ, Tamminga C, Huggins W, Hamilton C. Common Data Elements for National Institute of Mental Health-Funded Translational Early Psychosis Research. *Biol Psychiatry Cogn Neurosci Neuroimaging*. 2020;5(1):10-22. 10.1016/j.bpsc.2019.06.009

5. Lång U, Yates K, Leacy F, et al. Systematic Review and Meta-analysis: Psychosis Risk in Children and Adolescents With an At-Risk Mental State. *J Am Acad Child Adolesc Psychiatry*. 2021;61(5):615-625. https://doi.org/10.1016/j.jaac.2021.07.593

6. Coffey M, Hewitt J. You don't talk about the voices': voice hearers and community mental health nurses talk about responding to voice hearing experiences. *J Clin Nurs*. 2008;17(12):1591-600. 10.1111/j.1365-2702.2007.02185

7. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 5th ed. 2013

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9. Jackson, J. L., Kuriyama, A., Anton, A., Choi, A., Fournier, J.-P., Geier, A.-K., Jacquerioz, F., Kogan, D., Scholcoff, C., & Sun, R. (2019). The accuracy of Google translate for abstracting data from non–English-language trials for systematic reviews. Annals of Internal Medicine, 171(9), 677. https://doi.org/10.7326/m19-0891