

# Clinical Assessment of Children and Adolescents

**Nuria de la Osa**  
**Miguel Á. Carrasco**  
(Editors)

New Contributions to  
Research and Practice

# Clinical Assessment of Children and Adolescents

## About the Editors

**Nuria de la Osa, PhD**, is associate professor of psychological assessment in the Faculty of Psychology at the Universitat Autònoma de Barcelona, Spain. Her research and publications have been focused on diagnostic and assessment instruments for children and adolescents' clinical problems, more specifically structured interviews, and the assessment of conduct problems. She is a clinical psychologist with many years of clinical experience.

**Miguel Á. Carrasco, PhD**, is full professor of clinical psychological assessment in the Faculty of Psychology at the National University of Distance Education (UNED) in Madrid, Spain. He has been working as a teacher, researcher, therapist, and supervisor of children and adolescents with psychological problems for more than 20 years. His research interests focus on parenting behavior, children's psychological problems, and clinical assessment, especially in children and adolescents.

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Edited by

**Nuria de la Osa**

**Miguel Á. Carrasco**



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# Chapter 1

## Clinical Assessment of Children and Adolescents: Definitions, Characteristics, and New Challenges

Miguel Á. Carrasco<sup>1</sup> and Nuria de la Osa<sup>2</sup>

<sup>1</sup>Faculty of Psychology, National University of Distance Education (UNED),  
Madrid, Spain

<sup>2</sup>Department of Clinical and Health Psychology, Autonomous University  
of Barcelona (UAB), Cerdanyola, Spain

### Highlights

- Child and adolescent psychological assessment historically emerged from three main fields of knowledge: namely, philosophy, medicine, and pedagogy, through the study of development and intelligence with schoolchildren and psychiatric cases.
- Clinical assessment is a complex and comprehensive process that can be understood from a general decision-making process framework and from a specific framework for the details of child psychological assessment.
- The twofold general and specific framework has important implications for the practice of the psychological assessment of children and adolescents.
- Scientific, technological, social, and cultural changes mean that child psychological assessment is facing new challenges and opportunities.

### Introduction

Clinical assessment is a complex process that requires a multimethod and comprehensive approach to identify the difficulties, strengths, and needs of people. Over the last 2 centuries, clinical psychology has become a scientific and applied discipline in its own right. Inspired by the fields of philosophy, medicine, and pedagogy, the practice of as-



sessing children has emerged within clinical psychology. The study of children's mental growth, development, and intelligence, as well as the study of schoolchildren and psychiatric cases, makes up the first steps in child assessment. At present, child and adolescent clinical assessment is its own field within clinical psychology, with scientific standards derived from evidence-based research and practice.

A twofold framework of child psychological assessment can be used to better understand this area of clinical psychology. The first is the basic and general approach to clinical psychological assessment as a decision-making process that focuses on patient referrals. The second framework comprises the specificities of child assessment, which include (a) a specific legal and ethical approach for minors; (b) a developmental perspective (child development and child psychopathology) that incorporates genetic, biological, social, cultural, family, and school factors; and (c) a situational dependence (i.e., culture, family, school) with a multimodal approach (i.e., multidimensional, multimethod, and multi-informant assessment).

This chapter uses this twofold framework as a lens through which to introduce child and adolescent psychological assessment, describing the main challenges and opportunities that the assessment field faces in the future.

## Clinical Assessment in Clinical Psychology: Some Historical Notes

Clinical psychology emerged at the end of the 19th century with the founding of Witmer's psychological clinic, receiving official recognition at the fifth annual meeting organised by the American Psychological Association (APA) in December 1896 in Boston. Initially, Witmer treated children with learning and behavioural problems. His first case was a 14-year-old boy with spelling problems, and he went on to handle many other cases involving different clinical problems. Witmer also adapted tools from experimental research (e.g., the chronoscope, kymograph, ergograph, and plethysmograph) as diagnostic instruments to assess the memory, visual discrimination, and muscular coordination of schoolchildren who had been referred to the clinic through the school system. In 1907 the inaugural edition of the journal *The Psychological Clinic* was the next step, disseminating information on case studies in which the diagnoses and treatments were outlined using an interdisciplinary approach.

Two important historical milestones for the development of general clinical assessment can be distinguished (Geisinger, 2000). The first was the development of mental testing, especially intelligence testing, in World War I (1914–1918) and World War II (1939–1945). Important authors during these eras included Wilhem Wundt, Francis Galton, James McKeen Cattell, Henry Herbert Goddard, Alfred Binet, Theodor Simon, Lewis Terman, Robert Yerkes, and Arthur Otis. The second milestone was the assessment of and intervention in psychiatric cases affected by posttraumatic stress disorder (“shell shock”) at the end of these wars, conducted by authors such as Harry Hollingworth, Edward Thorndike, and Robert Woodworth. In the present era, psychologists and psychiatrists can use a battery of tests to assess patients, including measures of intellectual functioning, personality, and morale, and tests of vocational interests and aptitudes.

This assessment role may be considered the beginning of clinical psychology. In this regard, since its inception 2 centuries ago, clinical psychology has been considered a general practice specialty that assesses, diagnoses, predicts, prevents, and treats mental disorders, as well as tackling other individual or group problems to improve mental health and adaptation. However, until 1970, clinical psychologists mainly worked as assistants to physicians, particularly psychiatrists. Their task was often limited to conducting complementary evaluations related to intelligence and personality problems. The successes of the 1960s and 1970s marked the culmination of clinical psychology as a profession, although its impact on the practice of clinical psychologists was not felt until the 1980s.

The most notable contributions to childhood psychology came from three sources of knowledge: namely, philosophy, medicine, and pedagogy. Considering this, and looking at it from a historical perspective, some important precursors for the psychological clinical assessment of children and adolescents can be mentioned:

- At the end of the 19th century and the beginning of the 20th, the first historical compilations were made on the study of the child in Germany. Wilhem Preyer, with his study of “the mind of the child” (Preyer, 1882), showed the development of children’s perception, cognition and motor skills and will, by studying their mental growth, and made core observations concerning the mental development of the child in their first years of life.
- Around that time, Hermann Ebbinghaus, who pioneered the experimental study of memory (i.e., the forgetting curve and the spacing effect) and the learning curve, analysed the mental abilities of schoolchildren using sentence completion exercises.
- Significant contributions were made by Oscar Chrisman, Ovide Decroly, K. Stumpf, E. Meumann, Jean-Jacques Rousseau, Edouard Claparède, Jean Piaget and Maria Montessori, James Sully and G. Stanley Hall, Jean Marc Gaspard Itard, among others, to knowledge on children’s behaviour and development in the field of paedology in the 19th and early 20th centuries.
- Studies of children’s intelligence by Alfred Binet, Theodore Simon, and Lewis Terman led to the first intelligence tests for children in the late 19th century and early 20th centuries. Not long thereafter, in the late 1930s, Wechsler developed intelligence scales.
- Freud’s clinical case of “Little Hans,” a 5-year-old boy with a phobia of horses, was published in 1909 (Freud, 1909).
- John Broadus Watson conducted the controversial “Little Albert” experiment in 1920 using a behaviourist approach.
- Studies on child development observation were conducted by Charlotte Bühler and Hildegard Hetzer in the 1920s and 1930s, Merrill Palmer in 1954, and Arnold Gesell and Nancy Bayley in the 1940s and 1950s.
- Lauretta Bender designed the Bender-Gestalt Test in 1938 to evaluate visual-motor maturation in children. She also performed research on autism spectrum disorders in children, as well as research on suicide and violence.

Throughout this historical sketch, we can see the first development of child assessment in the areas of intelligence and personality. Secondly, to a lesser extent, there were developments in the assessment of social, emotional, and behavioural problems. Accordingly, in terms of clinical practice and psychological testing, studies examining clinical

assessment procedures for children and adolescents (Cashel, 2002; Evers et al., 2017) have reported that the most often used measures include intelligence tests (primarily the Wechsler scales), various achievement measures (i.e., the Woodcock-Johnson Tests of Achievement), human figure drawings, the Bender-Gestalt Test, the Thematic Apperception Test (TAT), and the Rorschach. In addition to these measures, behaviour ratings (e.g., the Child Behavior Checklist [CBCL] and Conners Parent and Teacher Rating Scales), behavioural observations, the Sentence Completion Test, the H-T-P Technique, and Kinetic Family Drawings are also very popular. The most frequently used procedures include intelligence and personality tests, structured observations in classrooms, behavioural rating scales, and interviews with teachers, parents, and children.

Since the appearance of the main classification systems for mental health disorders – namely, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), first published by the American Psychiatric Association in 1952, and the *International Classification of Disease* (ICD), first published by the World Health Organization (WHO) in 1948 and including a section on psychiatric disorders on ICD-6 (Hirsch et al., 2016) – the diagnosis assessment has made clinical interviews an essential tool for child clinical assessment. The first standardised diagnostic interviews to operationalise diagnostic criteria for children were developed in the late 1980s and early 1990s. For instance, structured interviews, such as the Diagnostic Interview for Children and Adolescents-Revised (DICA-R; Reich et al., 1992) and the NIMH Diagnostic Interview Schedule for Children (DISC-2.3; Shaffer et al., 1992), were some of the first interviews developed to improve the reliability of psychiatric diagnoses for epidemiological research. Because structured interviews were primarily designed to produce categorical diagnoses, and they had limited application for the school-based assessment of children's problems, semistructured clinical interviews (e.g., the Semistructured Clinical Interview for Children and Adolescents [SCICA]; Achenbach & McConaughy, 1994), child behaviour checklists, and rating scales (e.g., the CBCL; Achenbach, 1991) were later introduced as an empirically based way to make an assessment to provide an alternative dimensional diagnosis. The classification systems of disorders, the clinical interviews, and alternative scales and tests have all been periodically updated since then.

According to Benjamin (2005), if there is one activity that characterises applied psychology in the first half of the 20th century, it is psychological testing. Currently, the use of new and updated methods and measures allows the procedures of psychological assessment in children and adolescents to be consolidated. Child and adolescent clinical psychology (and, more specifically, child psychological assessment) finally had its own entity – one that could be expected to work on behalf of the patients' interests.

A final issue in this historical look at the evolution of the clinical assessment of children and adolescents is the growing emphasis on evidence-based assessment (EBA). In recent decades, two main scientific movements have emerged in the scientific field of psychology: evidence-based assessment (Hunsley & Mash, 2007) and evidence-based practice (EBP; American Psychological Association Presidential Task Force on Evidence-Based Practice, 2006). These two movements have involved developing and implementing standards for psychological assessment in policy, practice, and research settings.

EBA is “an approach to clinical evaluation that uses research and theory to guide the selection of constructs to be assessed for a specific assessment purpose, the methods and measures to be used in the assessment, and the manner in which the assessment process

**Table 1.1.** Important precursors and historical milestones in the psychological clinical assessment of children and adolescents

Period	Historical milestone	Relevant authors
Late 19th century (1880–1900)	Beginnings of clinical psychology.	Witmer
	Adaptation of research tools as diagnostic instruments for schoolchildren.	
	First compilation of the study of the child in Germany.	Wilhem Preyer
Early 20th century (1900–1930)	Psychological testing. Intellectual and personality assessments are incorporated through test development.	Wundt, Galton, McCattell, Herbert, Goddard, Woodworth, Binet, Simon, Terman, Yerkes, and Otis
	Assessment and intervention of psychiatric cases. Contribution by paedology to child behaviour and development.	Chrisman, Decloy, Stumpf, Meumann, Rousseau, Clarapède, Piaget, Montessori, Sully, Hall, and Itard
1930s and 1940s	New effective instruments and techniques became available: Rorschach, MMPI, and TAT. Expansion of the field of clinical psychology after World War II. Assessment became a central focus in clinical psychological practice.	Klopfer, Hathaway and McKinley, and Stein
	Studies on child development observation and visual-motor maturation in children.	Bühler, Hetzer, and Bender
1940s and 1950s	Studies on child development observation.	Merrill Palmer, Gesell, and Bayley
1960s and 1970s	Expansions of clinical psychology as an application area. Assessment: a central theme of clinical psychology.	

Note. MMPI = the Minnesota Multiphasic Personality Inventory; TAT = the Thematic Apperception Test.

unfolds” (Hunsley & Mash, 2007, p. 30). It is based on three main principles: (a) the assessment should be guided by the most current and best available research (e.g., a disorder’s symptoms, aetiologies, comorbid conditions, effective treatment); (b) the interpretation of the results must be validated; and (c) the assessment process should be guided by a hypothesis-testing approach (Barry et al., 2013; Mash & Hunsley, 2005).

Additionally, EBP refers to the integration of the best available research evidence, patient characteristics (culture and preferences), and clinical expertise (American Psychological Association Presidential Task Force on Evidence-Based Practice, 2006; Roberts et al., 2017). This integration has the purpose of promoting effective psychological practice and enhancing public health by applying empirically supported principles of psychological assessment, case formulation, therapeutic relationship, and intervention. Subsequently, it can serve as a useful framework to guide future research (Table 1.1).

Nowadays, clinical psychology has developed a high standard of empirical research using a wide variety of research methodologies, thereby producing psychometrically sound instruments for psychological assessment and the accumulation of rigorous evidence on major childhood disorders. However, there are still many promising areas to explore, and there remains an important gap between the state of knowledge about effective assessment and treatment and clinical practice.

## Clinical Assessment of Children and Adolescents

### A Basic and General Framework for the Clinical Assessment of Children and Adolescents

Psychological assessment is a decision-making process in which psychologists try to address a diagnostic question within a hypothesis-testing procedure. During this process, evaluators must integrate the information collected from several sources and methods in a dynamic and interactive way. From the EBA perspective, psychological assessment uses research and theory to guide the selection of constructs to be assessed as well as the suitable methods and measures for the specific assessment purpose (Hunsley & Mash, 2007). In the broad field of clinical psychology, assessment is mainly concerned with empirical research, including clinical judgment and the application of decision-making models; with the validation and application of assessment instruments (i.e., scales, observational methods, and interviews); and with processes and methods. Psychopathological symptoms, personality, interpersonal behaviour, and cognitive and neuropsychological processes are some of the main relevant contents of a clinical psychological assessment. Thus, assessment is a foundational component of clinical psychology as a discipline.

The functions of clinical assessment and treatment are characterised as an ongoing reciprocal process, whereby assessment tries to answer three main questions (the three “P”s; Youngstrom et al., 2017): Does assessment predict (P) an important criterion? Does it prescribe (P) a type of treatment or a change in the plan? Does it inform the process (P) of working with the child (i.e., mediators, progress, or outcomes)? The main purposes of clinical psychological assessment thus include prediction, prescription, and a process report (Youngstrom, 2013).

*Prediction* refers to an association with a criterion of importance, which could be a diagnosis or another category of interest. For this purpose, classification becomes an important issue in two ways: first, determining when psychological functioning is abnormal, deviant, or in need of treatment; and second, distinguishing among different dimensions or types of psychological functioning (Frick et al., 2020).

*Prescription* refers to the assessment providing the information (e.g., diagnosis, moderators, context) that allows us to choose a treatment. And, finally, a *process report* refers to collecting information (e.g., mediators, measures of adherence or preferences for treatment) about progress over the course of treatment and quantifying the outcomes. The final goal is to connect the three “P”s to prognosis and treatment through the *case formulation*.

All these purposes are framed in a comprehensive process within the general clinical context and the particular situation of the child being assessed. While context remains poorly

understood, and there is a lack of consensus regarding how it should be defined and captured within research (Rogers et al., 2020), most studies include individual perceptions, organisational support, financial resources, social relations, leadership, and organisational culture and climate (Nilsen & Bernhardsson, 2019). As a multidimensional construct, “context encompasses micro, meso and macro level determinants that are pre-existing, dynamic and emergent throughout the implementation process” (Rogers et al., 2020, p. 18). According to a review by Nilsen and Bernhardsson (2019), the *micro level* of health care includes patients’ preferences, expectancies, attitudes, knowledge, needs, and resources that can influence implementation; the *meso level* includes all organisational dimensions (culture and climate, readiness to change, support, structures); and the *macro level* includes the wider environment, such as policies, guidelines, research findings, evidence, regulations, and organisational networks.

In the clinical context, focusing on the referral issue and the kind of mental health services (primary care, hospital setting, neuropsychology, etc.), the comprehensive process of assessment with children and adolescents entails: (a) narrowing down and clarifying the referral issue; (b) designing the evaluation and clarifying the purpose of testing according to the child’s developmental stage and the initial hypotheses regarding what might be leading to or maintaining the problems (Frick et al., 2020). Later in the assessment process, these hypotheses will guide the initial treatment planning. The process then leads to (c) conducting the assessment in multiple domains of functioning across multiple assessment techniques. In summary, child psychological assessment is a comprehensive process that involves a multimethod, multi-informant, and multicomponent (traits/domains) approach.

The child’s particular context is to be assessed by focusing on multiple dimensions beyond the clinical setting. Family and school settings become two essential parts of the general context in the child psychological assessment–intervention implementation. In this regard, the main individual psychosocial risk factors associated with youth psychological disorders must be assessed. Specifically, these are socioeconomic disadvantage (poverty, parental unemployment, poor parental education, teenage parent), nonnuclear family structure (single-parent or step-parent household), parental risk characteristics (parental mental illness, parental drug use, parental crime, step-parent dysfunction), family dysfunction (poor supervision, tense or disinterested parent, parent–child conflict, interparental problems), and stressful life events (maltreatment, loss-of-life events, violent life events; Copeland et al., 2009).

## A Specific Framework for the Clinical Assessment of Children and Adolescents

Although the assessment process – the sequence of phases that are implemented to carry out the evaluation – is similar in children, adolescents, and adults, there are some peculiarities that distinguish this process in children and young people. Some of these specificities, mentioned in the following, create a particular framework in the evaluation of children and adolescents and require professional specialisation for practitioners.

## ***The Special Legal and Ethical Approach for Minors***

Children are under the age at which they legally assume adulthood and are granted the rights afforded to adults in society. Depending on the jurisdiction and application, this age may vary, and can be 12, 16, 18, or 20. The legal age of adulthood is related to, among other things, the age of consent; the age of criminal responsibility; the age of majority; marriageable age; voting age; or the age at which an individual may drive, gamble, or consume alcohol. Specifically, for psychological assessment and intervention (e.g., testing, treatment choices, parents' participation, report writing to inform others, etc.), informed consent from an adult who is responsible for the child is the first concern. Children under the age of consent cannot legally provide informed consent for services; consequently, in any clinical service for a child or adolescent, it is both a legal and ethical requirement to obtain informed consent from the adult responsible. It is imperative that parents and children are fully informed about the testing process and their rights and responsibilities both prior to starting the assessment and during the assessment process. Psychologists must consider the legal situation of children and adolescents, including their legal age and their degree of maturity, given the implications for both the ethical consequences and psychological decision making. Generally, being considered a mature minor requires: (a) an intellectual appreciation of the causal connections between one's choices and the consequences; (b) a realistic affective and evaluative capacity to appreciate the weight and significance of the risks and benefits, proximate and distant, associated with the consequences of one's choices; and (c) a self-determining capacity to choose or to decline to make a choice (Partridge, 2013).

In relation to the clinical ethics of child and adolescent assessment, children's rights, and often expediency, are in the best interest of the child. This is especially true when the specifications of a psychological examination conducted by parents, lawyers, judges, or teachers conflict with the ethics of the profession, the right practice, or other legal standards. State status and institutional rules and regulations regarding the rights of minors, the ethical principles, and the conduct of practitioners should be considered in the assessment of children and adolescents. National and international organisations have established ethical codes and guidelines that are relevant to this issue (e.g., APA, 2017a; Australian Psychological Society, 2018; Canadian Psychological Association, 2017), including guidelines for psychological assessment and evaluation (APA, 2020) and standards for educational and psychological testing (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014).

## ***Developmental Approach***

The developmental approach to understanding children's emotions and behaviours has many implications for the assessment process. These include the importance of selecting appropriate assessment instruments, the use of appropriate language to explain results to children, and knowing the expression of psychopathology throughout different age ranges.

A developmental approach to psychological assessment embraces two scientific disciplines: child development and child psychopathology (Cicchetti & Rogosch, 2002; Rutter & Sroufe, 2000). The right or problematic functioning of children and their emotions

and behaviours is influenced by developmental processes of change, such as cognitive, linguistic, socioemotional, behavioural, and biological processes. This holds even in the presence of temperamental or personality patterns (Beauchaine et al., 2018) or core pathological processes that underlie the overt expression of symptoms (Krueger & Markon 2006). All of these interrelated maturation processes interact with other risk and protective factors (e.g., family or school environment, peer relationships) that result in many different outcomes or in a particular outcome at certain points in development. Developmental changes also affect the stability of behavioural and emotional functioning in childhood (temperamental/personality dimensions, externalising–internalising problems, etc.). Measures in the assessment process must be designed to assess these various causal pathways and interrelated relations that lead to an explanation of the child's current functioning, to identifying the needs of the child, and to providing the best tailored treatment (Frick et al., 2020).

Furthermore, the expression of symptoms and the way in which a disorder and its course appear depend on the child's age and stage of development. In this regard, assessors should consider developmental prevalence and age-dependent disorders (e.g., bedwetting, childhood fears, separation anxiety), whereby age sometimes becomes a diagnostic criterion. Numerous psychological problems of children occur more frequently at certain ages, such as insomnia and oppositional disorder at 3 years of age (Ezpeleta et al., 2014); phobias, separation anxiety, autism spectrum disorder, attention-deficit/hyperactivity disorder, and social anxiety at 8–13 years; and anorexia nervosa, bulimia nervosa, obsessive-compulsive disorder, binge eating, and cannabis use disorders at 17–22 years (Solmi et al., 2022). A worldwide meta-analysis (Polanczyk et al., 2015) examining the global prevalence rates among children and adolescents 6 to 18 years old found notable rates of anxiety disorder (6.5%), any disruptive disorder (5.7%), attention-deficit/hyperactivity disorder (3.4%), and depressive disorder (2.6%). Moreover, children seen in clinical settings frequently meet diagnostic criteria for more than one disorder or have symptoms from multiple disorders (Ezpeleta et al., 2014; Polanczyk et al., 2015; Solmi et al., 2022). Indeed, recent representative data on comorbidities in children from 6 to 18 years old indicated that rates of comorbidity are approximately 50% (Canals et al., 2019; Polanczyk et al., 2015), and 5.1% of children aged 3 years meet criteria for two disorders, with 6.1% meeting criteria for three or more (Ezpeleta et al., 2014). Thus, comorbidity is the rule rather than the exception in children with psychological difficulties. The need to accurately assess comorbid conditions is a constant clinical reality. From a developmental perspective, comorbidity and the early onset of psychological problems are an indication of a more severe pathology and a more severe impairment in daily life functioning (Finning et al., 2019). Moreover, children diagnosed with comorbid conditions that appear early on are more likely to have a chronic history of mental health problems and use more health care services than those with a single diagnosable condition at one specific time in their life (Newman et al., 1998; Valderas et al., 2009).

Therefore, specifically for the psychological assessment of children and adolescents, there is a need for a developmental approach that includes developmental norms (i.e., knowledge of developmental changes in the behaviour of children, norm-referenced information that allows assessors to determine an exaggeration or qualitative deviation from normal development, measures that are sensitive to developmental factors) and developmental processes (i.e., a process-oriented approach, with potential multiple and interrelated causal pathways). Meanwhile, critical components of the clinical assessment



of children include the process, method, measures, conceptualisation of problems, and interpretation of the results.

### ***Contextual Approach: Situational Dependence and the Relevance of the Context***

Although in developmental psychopathology it has been empirically demonstrated (Kiff et al., 2011; Matz & Harari, 2020) that there is a transactional perspective (i.e., in which there is a reciprocal influence between the child's behavior and its context), there is a high degree of situational dependence in the behavior of children and adolescents. Informants who typically observe a child in different situations (e.g., with teachers vs. with parents) tend to show more variability between their reports than informants who typically observe the child in similar situations (Achenbach et al., 2017; Achenbach et al., 1987). Different reasons can explain this high situational dependence: (a) a specific context (such as family, school, or a social group) has different demands and different contingencies (i.e., rewards, punishments, stimuli) that affect the variability of child behaviour; (b) some kinds of behaviours are exclusively observed in a typical context where those behaviours appear more frequently – for example, sleep problems in the family context or attention difficulties in the school context; (c) children's cognitive and emotional development (knowledge acquisition of mental rules, effective emotional regulation strategies, etc.) is more restricted than that of adolescents or adults, and subsequently, children's control of their own behaviour tends to be externally regulated. Understanding what situational cues may provoke emotional or behavioural reactions is useful in altering or preventing circumstances that serve as stimuli. For all these reasons, context is an important focus, both for the intervention and for the assessment of children and adolescents.

### ***Multimodal Approach***

A multimodal approach is a comprehensive evaluation conducted by a multimethod, multi-informant, and multicomponent strategy (Frick et al., 2020). A large body of research has indicated that information on children's emotions and behaviours provided by different informants tends to range from low to moderate ( $r_{xy} = 0.3-0.6$ ) (Achenbach et al., 2017; De Los Reyes et al., 2013, 2015; De Los Reyes & Makol, 2021). The lack of agreement between informants has been explained in various ways, including: (a) different measurement techniques used across informants; (b) different situational demands across settings, with subsequently situationally specific behaviours in children across those settings; (c) the level of analysis (i.e., broad dimensions, single behaviours, aggregated scores, or composites of multiple behaviours) at which agreement is being measured across informants; (d) the behavioural manifestation or symptoms of a psychological dimension or construct across situations; (e) the types of behaviours to be assessed (internalised–externalised) and the access to the information (private, public, external, internal ...); and (f) the differences in perceptions or potential biases between the informants (e.g., teachers vs. parents).

The multimodal approach must be considered in terms of error variance (i.e., statistical variability of the scores caused by the influence of extraneous variables: measurement imprecision, malingering, rater bias, patients' health status or attitudes, etc.) and incre-

mental validity (i.e., the significant increase of information that a measure adds to other sources of data to predict a criterion). A comprehensive evaluation maximises the reliability of the obtained information. That is, gathering information from multiple sources and across multiple settings and aggregating it across instruments is a crucial method to increase reliability and reduce temporal variance, source variance (e.g., amongst raters and instruments) and setting variance (Kraemer et al., 2003; Makol et al., 2020). Likely, the need to test incremental validity (Beidas et al., 2015; Youngstrom & De Los Reyes, 2015) is a key driver guiding the selection of measures and informants, with important practical implications for conducting an efficient assessment.

## Practical Implications

Considering the previous framework of children's psychological assessment, a comprehensive evaluation conducted by a multimethod, multi-informant, and multicomponent strategy is needed for clinical practice (Frick et al., 2020). The following is a summary of some of the major practical implications.

- The special legal and ethical approach for minors brings us to the age of consent and related issues. The adults who are responsible, as well as the children and adolescents themselves, need to be fully informed about the testing process and their rights and responsibilities, both prior to starting the assessment and during the assessment process. The assessors need informed consent, at least, to test children, choose treatments, write reports, and inform others.
- Various issues, such as their legal condition, maturity, or the problems they cause for significant others in their environment, mean that children and adolescents are rarely self-referred for evaluation or treatment; therefore, children's motivation is critical for their participation and cooperation. Assessors thus need sufficient motivation skills to ensure that children and adolescents participate and cooperate in an active and dynamic assessment process. The lack of motivation can be related to problematic evaluation outcomes. Children might be afraid of the evaluation results, especially as evaluations are often prompted by problems at home or school.
- The level of a child's development needs to be known in order to select appropriate assessment instruments and measures and use suitable language to explain the results to the child. Assessors must consider and understand the typical expression of psychopathology with age, the developmental prevalence of disorders in children and adolescents, age-dependent disorders, comorbid conditions, and how developmental changes affect the stability of childhood behavioural and emotional functioning. This knowledge allows assessors to determine the expected or "normal" development, select measures that are sensitive to developmental factors, and identify developmental processes and potential causal pathways to conceptualise the psychological problems and interpret the assessment results.
- The context needs to be specifically assessed in the psychological assessment of children and adolescents. There is a high degree of situational dependence in children's behaviour; therefore, contextual variables become an important focus for both intervention and evaluation. In this regard, children often exhibit problems in multiple areas of functioning (e.g., home, school) and domains (e.g., emotional, behavioural, learning, and social).

- The lack of agreement between informants makes it necessary to obtain information from different informants. In both clinical practice and research, including multiple informants is important because studies have demonstrated that various viewpoints are not mutually exclusive and may each offer valid information. For instance, it is important to realise that discrepancies among informants' reports can substantially impact clinicians' interpretations of findings (Nelemans et al., 2016) and that researchers may obtain different findings, and thus reach different conclusions, depending on which informant they rely on.
- It is essential that the parents or responsible adults participate in the assessment process of children and adolescents. This also implies the need to build a good rapport with parents and teachers (or other relevant adults), including a warm and relaxed relationship that promotes mutual acceptance, confidence, understanding, respect, and cooperation between the assessor and the informants.

These practical implications for the implementation of an assessment process with children and adolescents show that competent assessors with specific skills, attitudes, and knowledge are required. The assessors need to be, at the very least, knowledgeable of the ethical, legal, and regulatory issues, have good interviewing and relationship skills, and understand measurement theory, psychological testing, case formulation, the developmental processes, and the basic characteristics of childhood psychopathology (Krishnamurthy & Yalof, 2010; Wright, 2019). Psychological assessment competences should integrate both research and clinical aspects through a joint focus on both practical skills and relationship factors.

## New Challenges

Considerable scientific and applied progress has been made in psychological assessment, but the field faces important challenges and opportunities in the future. Looking into the decades ahead for child psychological assessment research, we can stress some main targets for a future agenda. These challenges and opportunities can be grouped into science–practice integration; new research about EBA innovation and utility in the clinical setting; technological advances; and diversity, gender, family, and sociocultural changes. In the following, we briefly discuss the current state of, and future directions for, assessment of children and adolescents.

## EBP in Clinical Child and Adolescent Psychology

Although the emphasis on science–practice integration is shared among the various trained practitioners, councils, academies, and accrediting bodies, EBP in psychology continues to be a matter of some debate concerning the conclusions drawn and decisions made based on clinicians' expertise. As Roberts et al. (2017) point out, it is imperative for researchers to integrate clinical expertise (knowledge acquired via clinical training and experience) and clinical research (knowledge acquired via randomised controlled trials and peer-reviewed studies), thus allowing decisions regarding idiographic assessment to be guided by current research on EBA. They should also develop a deep and useful body of knowledge about factors derived from the characteristics of children

and adolescents (i.e., comorbidity, culture and ethnicity, family, treatment moderators) and clinicians (i.e., clinical judgment, decision making and conceptualisation, education, training, and therapeutic alliance). A thorough understanding of effective methods (i.e., assessment processes; integration methods and interpretation discrepancies; who should report on the behaviours, mechanisms, and trajectories of change; transdiagnostic applications; and well-established treatments) is also critical. Effective methods enable us to address the broadest nomothetic questions, what works for a particular problem and how (mediators), and children and clinician factors, which may represent idiographic exceptions that could be considered as moderators.

## Research About EBA Innovations and Utility in Clinical Settings

Another challenge is to conduct clinical research, epidemiological studies, and meta-analyses to enhance evidenced-based innovations and utility (Youngstrom, 2013). More research is needed into diagnosis rates, the key behavioural indicators across a range of services and settings, the mapping of a list of families' concerns onto diagnostics, the identification of moderating variables that change referral patterns, and the comparison of nomothetical patterns with local or idiographic patterns. As Youngstrom (2013) suggests, this information and research will allow us to convert the findings into a metric amenable to idiographic assessment and decision making. This is summarised as follows: (a) ratios attached to low, moderate, and high scores on the test instead of "optimal" cutoff scores; (b) a narrow assessment to increase the discriminative validity and studies of incremental assessments, combining and comparing different tests to clarify diagnoses; (c) an analytic framework to interpret cross-informant data patterns for evaluating the diagnostic efficiency of each informant's perspective and testing whether there is significant incremental value added by combining different informants' perspectives; (d) refined assessment for case formulation, treatment planning, and goal setting to examining potential moderators of optimal treatment response; (e) an exploration of validated measures for monitoring treatment progress (i.e., mediators, process variables, and outcomes) in a way that is easy for therapists and families to interpret; and (f) the conducting of more research on measures to evaluate treatment outcomes, maintenance, and relapses, to determine the best predictors of relapse or progression in youths who have previously benefitted from treatment.

## Technology and Advances in Psychological Evaluation

The introduction of computers and technological advancements since the beginning of the 21st century have drastically changed the way we perform psychological assessments. These critical technological advancements include, among others, the adoption of computerised, adaptive testing based on item response theory (Gibbons et al., 2016), the proliferation of the Internet and smart applications (e.g., mobile applications; Cohen, 2019; Gregory et al., 2017; Miner et al., 2016; Radovic & Badawy, 2020), online questionnaires that can be delivered en masse to different population groups (Berger, 2006; van Balle-goijen et al., 2016), virtual reality (VR) or augmented reality (AR) for psychological testing within standardised environments (e.g., virtual spaces for unsafe, inaccessible, costly,

or even nonexistent or difficult environments to set up), and location-independent testing (Parsons & Phillips, 2016; Roberts et al., 2019). In addition, a recent technological advancement for psychological assessment has been artificial intelligence (AI), which simulates aspects of human intelligence such as planning, reasoning, pattern recognition, and problem solving by using machine learning (ML) to process large datasets utilising mathematical models or algorithms (Bickman, 2020; Fonseka et al., 2019; Miner et al., 2016; Radovic & Badawy, 2020).

As such, it is no surprise that VR and AI are identified as the two technologies that may bring a new era to psychological assessment. VR technology has become increasingly mobile and can monitor how the user or even a group of users move in, and interact with, the environment and with each other. VR can be integrated with bodily responses (e.g., electromyography, heart rate, eye tracking, brain responses). Moreover, it offers the possibility for increased haptic experiences and the integration of other senses or even elements of the environment, such as temperature or airflow (Roberts et al., 2019). Regarding AI, programs have been developed and applied to practices such as diagnosis processes, personalised treatment protocol development, and patient monitoring (Bickman, 2020; McGinnis et al., 2019). Automated ML-based analysis of big data from social media (e.g., X, known as Twitter until July 2023, and Facebook) and the Internet of Things (IoT) permits the exchange of user and context data. The rapid growth of smart mobile applications and wearable patient devices connected to the Internet through Wi-Fi or Bluetooth allows the formation of a network that facilitates communication between the physical and virtual domains.

This complex technology enables the detection of some of the psychological problems of children and adolescents, such as internalising problems (McGinnis et al., 2019) and suicidal behaviours (Walsh et al., 2018). It also aids in the classification of many other psychiatric problems, such as dementia, attention deficit or hyperactivity, schizophrenia, autism, depression, and substance abuse (for a review, see Durstewitz et al., 2019).

Of particular note is *ecological momentary assessment* (EMA), which comes under the broader umbrella of ambulatory assessment and experience sampling methodology. This is the collection of real-time data in naturalistic environments through ambulatory smart devices or mobile apps (Cohen, 2019). Since the mid to late 1990s, psychological clinical assessment has drawn on innovative technologies and methods, such as electronic diary assessment, ambulatory biosensors, neuroimaging, computer-assisted interviewing, and rating scales (Trull, 2007). Nowadays, the advancement of wearable/ambulatory technologies is bringing substantial changes through the integration of EMA and AI via mobile devices (e.g., smartphones and body sensors) in daily life within mHealth (refers to the utilization mobile devices, such as smartphones, tablets, and other wearable devices) into mHealth platforms (i.e., digital infrastructure or software system for delivering mHealth services such as Health monitoring, telemedicine or telepsychology, Health education ...) for collecting, processing, and modelling data and delivering and evaluating interventions in everyday life (Kim et al., 2019). A recent review (Russell & Gajos, 2020) showed that EMA is also feasible and reliable for studying the daily lives (e.g., physical activity, moods and behaviours, symptoms and experiences, and the psychophysiological monitoring of mental health problems) of children and adolescents as young as 7 years. Moreover, this methodology can be used to model three aspects of microdynamic patterns: fluctuations of a variable, intrapersonal processes situated in time, and interpersonal processes, using EMA data with meta- and mega-analytic techniques

(Chiang et al., 2020). Among other benefits, EMA helps to reduce recall bias, enhance ecological validity, and articulate a wide variety of affective and behavioural dynamics characterising the lived experience of children and adolescents, and promising possibilities for the treatment of psychopathology. However, as Cohen (2019) highlighted, the ambulatory biobehavioural technologies of psychological assessments have still not progressed beyond the proof of concept phase for clinical and commercial applications, and they have yet to be fully actualised. Legal, cultural, and language-specific issues and technical challenges related to transferring data from the devices and providing further evidence on reliability, validity, accuracy, and utility still need to be addressed (Reichert et al., 2021). Standardised apps should be developed considering relevant variables such as age, sex, or diagnosis. The next challenge for these mental health applications on the Internet and new technologies is their use to show evidence of their effectiveness and provide personalised approaches in health care diagnostics and therapeutics, referred to as *precision psychology* (August & Gewirtz, 2019; Horton, 2018). A personalised prevention approach involves key elements (August & Gewirtz, 2019), including (a) the identification of moderators (i.e., variables that predict differential responses to various intervention options); (b) an adaptive-sequential intervention design that specifies how a component of an intervention or its intensity should change over time, depending on the person's response to the intervention (e.g., active engagement, parent participation, adherence to the treatment) or the proximal outcomes that were assessed during the intervention (e.g., self-efficacy, change of symptoms, slight improvements); and (c) personalised devices (e.g., smartphones, wearable GPS units) as tailored technologies to improve accessibility and acceptability to provide just-in-time, interactive, and adaptive frameworks.

## Cultural and Social Diversity

Diversity, including cultural variety, the sex-gender perspective, family, low-income and economic marginalisation (LIEM), and sociocultural changes are some of the network's guiding principles (i.e., values, beliefs, or norms that guide the actions, decisions, and interactions within a network or community) for psychological research and practice. Regarding cultural diversity, we also need to include the perspectives and contributions from people outside of Western, educated, industrialised, rich, and democratic (WEIRD) societies (APA, 2017b; Cheon et al., 2020). More cross-cultural studies to promote greater inclusion in psychological research are needed, with diverse samples and tools to replace the dominant theories, methods, and data that are biased by Western ideals, values, and beliefs (Causadias & Cicchetti, 2018). It is also important to know how the inclusion of diversity impacts the credibility and replicability of current results. For instance, as Keller (2018) showed, evaluating a child's attachment system using the standards of a Western middle-class perspective (i.e., families with high levels of formal education, late first parenthood, few children in the family, and nuclear, two-generation households), which is representative of only about 5% of the world's population, is unethical. Caregiving values and practices are not uniform across the world; rather, they depend on the cultural models, goals, and values of the local context and the living conditions of the families. In this regard, new family forms (Golombok, 2015; Pearce et al., 2018) and current family changes (e.g., migrant families, same-sex parents, single parents, divorced and remarried families, never-married parents, cohabitation, multipatterned fertility, and cores-

idence with grandparents) are other challenges for the psychological assessment of children to address, with new variables and conditions, such as the parent–child relationship, parental mental health, child protection and developmental needs, social stigma, parenting coordination, parenting conflict, domestic violence, and child abuse or neglect.

Gender-sensitive psychological assessment practice provides general recommendations for psychologists who seek to increase their awareness, knowledge, and skills in psychological practice with boys versus girls (American Psychological Association, Boys and Men Guidelines Group, 2018; American Psychological Association, Girls and Women Guidelines Group, 2018) and more specifically with lesbian, gay, and bisexual people (APA, 2012) or transgender and gender-nonconforming persons (APA, 2015). The need for practice guidelines for gender diversity in psychological assessment is supported by the empirical and conceptual literature related to gender bias, discrimination, gender socialisation, masculinity ideology, gender role conflict, the higher rates of specific psychological problems identified in boys (e.g., aggression, substance abuse, suicide) versus girls (e.g., depression, eating disorders), or the poorer academic outcomes in boys compared with girls, including factors such as motivation, engagement, and achievement (Yu et al., 2021).

Diversity also includes the assessment of persons from LIEM backgrounds as a complex and multifaceted social issue with many implications (e.g., employment, education, achievement, access to resources and support, physical and mental health risks, discrimination, and oppression) that must be examined from multiple angles (APA, 2019). It is important to consider that children and adolescents are more likely to experience the consequences of poverty than adults (Bruner, 2017).

Finally, some important social changes related to the prevalence of psychopathology, puberty onset, and digital technologies must be also considered. According to the new prevalence research in children and adolescents (Keeley, 2021), 13% of adolescents aged 10–19 years live with a diagnosed mental disorder (40% of this attributed to anxiety and depression), with the highest prevalence rates of diagnosed disorders in the Middle East and North Africa, North America, and Western Europe regions. Moreover, children and young people also report psychosocial distress that disrupts their lives, and suicide is one of the most common causes of death among adolescents (Franklin et al., 2017; Keeley, 2021; WHO, 2014). Youths today differ from previous cohorts in the timing, onset, and duration of their maturation. Puberty onset is earlier, and youths spend a longer period in the pubertal transition (Lee & Styne, 2013; Mendle et al., 2019), with the subsequent psychosocial changes. Longitudinal health data support an increase during the early life course from adolescence to young adulthood, of obesity, intimate partner violence, and substance use (Harris et al., 2019). Today's youths tend to be digital natives, with the vast majority of Western youths obtaining their first mobile phone during their adolescence, allowing them to virtually navigate the world with access to platforms like YouTube, Instagram, TikTok, X, known as Twitter until July 2023, and Facebook. There is no doubt that digital technologies have important implications for the life of children and adolescents (Davis et al., 2020; Moreno & Radovic, 2018), impacting areas such as identity development; peer, romantic, and family relationships; well-being; and moral and civic engagement, with new psychological problems, which include sexting, grooming, sextortion, cyberbullying, self-sexualisation, self-objectification, and access to adult pornography (Martellozzo et al., 2020; Trekels et al., 2018). Likewise, digital technologies may promote adolescent development across health and education sectors (Radovic & Badawy, 2020).

Diversity and these new changes lead us to reconsider the measures, methods, and process of the psychological assessment of children and adolescents. Psychological assessment must develop and adapt processes, measures, and methods (e.g., language, communication, assessment, diagnosis, and treatment) to consider the great variety of factors that make up identity, such as race, ethnicity, country of origin, immigration status, sexual orientation, gender, religion and spirituality, ability, and language. Recommended and standardised measures for cultural diversity, with representative samples, as well as the measurement of new variables and contextual factors related to the new family and psychosocial and physical environments, are needed for the psychological assessment of children and adolescents. Those differences when selecting instruments, constructing hypotheses, and identifying the key mediators and moderators of psychological experiences will enhance research quality and generalisability. In addition, there is a need for new ethical, multicultural, gender-sensitive, and legal competences and training for the new generation of researchers, clinicians, and educators, who must ensure that research questions, methods, and approaches are appropriate for today's youths and that they have been adapted to address the changes they face.

## Further Reading

Bickman, L. (2020). Improving mental health services: A 50-year journey from randomized experiments to artificial intelligence and precision mental health. *Administration and Policy in Mental Health and Mental Health Services Research*, 47(5), 795–843. <https://doi.org/10.1007/s10488-020-01065-8>

This paper focusses on the potential contributions of artificial intelligence and precision mental health to improving mental health services. It is a conceptual paper that describes the current state of mental health services, identifies critical problems, and suggests how to solve them.

Roberts, M. C., Blossom, J. B., Evans, S. C., Amaro, C. M., & Kanine, R. M. (2017). Advancing the scientific foundation for evidence-based practice in clinical child and adolescent psychology. *Journal of Clinical Child & Adolescent Psychology*, 46(6), 915–928. <https://doi.org/10.1080/15374416.2016.1152554>

In this article, the authors provide a brief review of the development of EBP in clinical child and adolescent psychology, dealing with four points: (a) knowledge should not be confused with epistemic processes, (b) research on clinician and client factors is needed for EBP, (c) research on assessment is needed for EBP, and (d) the three-part conceptualization of EBP can serve as a useful framework to guide research.

Russell, M. A., & Gajos, J. M. (2020). Annual Research Review: Ecological momentary assessment studies in child psychology and psychiatry. *Journal of Child Psychology and Psychiatry*, 61(3), 376–394. <https://doi.org/10.1111/jcpp.13204>

This paper provides a review of studies that have used EMA with children and adolescents to characterize lived experience and examine temporal order and dynamics in youths' everyday lives.

Youngstrom, E. A., Van Meter, A., Frazier, T. W., Hunsley, J., Prinstein, M. J., Ong, M. L., & Youngstrom, J. K. (2017). Evidence-based assessment as an integrative model for applying psychological science to guide the voyage of treatment. *Clinical Psychology: Science and Practice*, 24(4), 331–363. <https://doi.org/10.1111/cpsp.12207>

Youngstrom et al. review current practices from an evidence-based approach, and propose some tactics that promote a realistic synthesis into an integrated EBA perspective.



The authors include links in each section to online supplemental materials that include additional details, annotated bibliographies, and illustrations of application to cases.

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