



## ADVANCES IN THE ASSESSMENT OF THE NEGATIVE SYMPTOMS OF THE PSYCHOTIC SYNDROME

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*The aim of this paper is to bring recent advances developed in the assessment of negative symptoms in psychotic spectrum disorders and related conditions to the professional psychologist. First, we briefly discuss the historical development of negative symptoms, their conceptualisation, and their impact on clinical practice and research. Second, the tools available for the assessment of negative symptoms are mentioned. The discussion focuses on the newly constructed tools and mentions their psychometric characteristics. Additionally, the measuring instruments for the assessment of negative symptoms as an expression of risk or vulnerability to psychosis are shown, within both the paradigm of high clinical risk and the psychometric paradigm. Third, and finally, we review and consider some conclusions, guidelines and possible future developments in this area of study.*

**Key words:** Psychosis, Assessment, Negative symptoms, Anhedonia, Measuring instruments.

*El presente trabajo tiene como objeto acercar al profesional de la psicología los últimos avances desarrollados en el campo de la evaluación de los síntomas psicóticos negativos en los trastornos del espectro psicótico y condiciones relacionadas. En un primer lugar, se comenta brevemente el desarrollo histórico de los síntomas negativos, su conceptualización, y su impacto en la práctica clínica y la investigación. En segundo lugar, se mencionan los instrumentos disponibles para la evaluación de los síntomas negativos. Se focaliza el discurso en las herramientas de nueva construcción, y se mencionan sus características psicométricas. Asimismo, se señalan diferentes instrumentos de medida para la evaluación de los síntomas negativos como expresión de condición de riesgo o de vulnerabilidad a la psicosis, tanto dentro del paradigma de alto riesgo clínico como psicométrico. En tercer lugar, y para finalizar, se diserta a modo de recapitulación sobre algunas conclusiones, directrices y posibles desarrollos futuros en esta área de estudio.*

**Palabras clave:** Psicosis, Evaluación, Síntomas negativos, Anhedonia, Test.

**T**he psychotic syndrome encompasses a set of heterogeneous clinical entities that are considered to be a major health and social problem. The psychotic spectrum disorders are among the ten leading causes of disability in the age group of 10-24 years (Gore et al., 2011), representing the "brain disorder" that generates the third most costs in Europe (Olesen, Gustavsson, Svensson, Wittchen, & Jönsson, 2012). This syndrome usually occurs in adolescence and early adulthood, and it affects 2-3% of the population (Perälä et al., 2007). Specifically, the estimated mean prevalence of schizophrenia is 4 per 1,000 people, while the mean incidence is 15.2 per 100,000 people (McGrath, Saha, Chant, & Welham, 2008). Beyond these figures, the impact that a psychotic episode has on the life of the individuals who suffer from it and their families compels

both researchers and clinicians to continue to direct all their efforts into investigating this group of disorders. Only a fuller understanding of the nature of psychosis, which considers its complexity and heterogeneity, will enable a more efficient management of social and/or healthcare resources (Fonseca Pedrero, Paino, & Fraguas, 2013).

The psychotic syndrome encompasses a wide variety of psychopathological domains among which are the positive, negative, cognitive, disorganised and affective dimensions (van Os & Kapur, 2009). The current classification models such as the DSM-5, attempt to capture the dimensional structure underlying the psychosis, using domains, gradients and dimensions (Barch et al., 2013; Heckers et al., 2013). The domains of psychopathology that define the psychotic disorders are as follows: hallucinations, delusions, negative symptoms, disorganised language, and disorganised or abnormal psychomotor behaviour. The gradients of the signs and symptoms define the severity of the disorder based on

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their level, number and duration, and they are used to identify and differentiate the psychotic spectrum disorders from each other. The dimensions refer to the structure of the clinical condition and correspond to the five domains mentioned earlier plus the cognitive function, depression and mania (Barch et al., 2013; Heckers et al., 2013). Each dimension is rated on a five point scale, where 0 refers to an absence or lack of presence, and 4 refers to presence and severity. Values above 2 are of sufficient severity and can be considered as the threshold for compliance with a diagnostic criterion.

This view of the psychotic syndrome proposed by the DMS-5 represents a shift in its conceptualisation moving towards a mixed or hybrid model that seeks to integrate the categorical and dimensional approaches. Many experts considered it necessary to introduce a dimensional model for assessment and diagnosis because, among other things, this enables us to: a) make a more specific and individualised patient assessment (Barch et al., 2013); b) capture the clinical heterogeneity observed in clinical practice, both at the inter-individual level and at the intra-individual level; c) have a better understanding of the high rates of comorbidity with other disorders (Buckley, Miller, Lehrer, & Castle, 2009) and between the dimensions of the syndrome itself; and d) incorporate studies of the psychotic-like experiences in the general population (Linscott & van Os, 2013). A dimensional approach considers that the psychotic symptoms, for example negative symptoms, are not specific to psychosis, and may be present in other disorders and diseases. In addition, these domains can be found normally distributed in the general population, as a variation of a psychological process, which, first, shows that their phenotypic expression varies in its severity gradient and, second, demonstrates the difficulty in defining the supposed boundary between "normality" and the clinical condition. The inclusion of a dimensional approach may enable us to overcome some of the shortcomings of the diagnostic manuals currently in use (specifically the DSM-5) and to improve the strategies for prevention, treatment and intervention (Heckers et al., 2013).

The study of psychosis and related conditions involves understanding, among other things, the way in which clinicians and researchers seek to capture and describe the syndrome (or any of its facets). The definition in the international classifications as well as the prevailing theoretical models in clinical psychology and psychiatry

determine, to a certain extent, how to evaluate and measure this construct (Lemos Giráldez, Paino, Fonseca Pedrero, & Vallina, O., in press). Therefore, at present, many of the assessment instruments (e.g., tests, structured interviews, and rating scales) used in clinical practice, in clinical trials and in research, will continue to be based on polythetic clinical-descriptive criteria, and not etiopathogenic criteria (Obiols, Barrantes-Vidal, & Zaragoza Domingo, 2006). In this regard, the understanding and analysis of the dimensions of the psychosis phenotype are closely linked to the measuring instruments used and the process of measurement, assessment and intervention. Without proper assessment it would not be possible to make an accurate diagnosis, and without an accurate diagnosis it would not be possible to perform an effective intervention. That is, if the assessment is carried out inadequately it is possible that both the diagnosis process and the plan of treatment and intervention will also be incorrect (Fonseca-Pedrero et al., 2011).

This article aims to bring to the professional psychologist the recent advances that have been developed in the field of the assessment of negative symptoms in the psychotic spectrum disorders. It is not intended to be a comprehensive review or to cover all of the known areas, techniques and instruments, but rather to provide a selective update of the most relevant measuring instruments in this field of study. First, we briefly discuss the historical development of negative symptoms, their conceptualisation, and their impact on clinical practice and research. Second, the tools available for the assessment of negative symptoms are mentioned, with the discussion focusing on the newly constructed tools. Specifically, the new developments in the identification and assessment of negative symptoms are provided, and their psychometric characteristics are mentioned. Also, different measuring instruments are noted for the assessment of negative symptoms as an expression of risk or vulnerability to psychosis. Thirdly, and finally, we summarise a number of conclusions, guidelines and possible future developments in this area of study. Readers who wish to focus more exhaustively on the assessment of psychosis and specifically negative symptoms may consult the previous studies (Fonseca-Pedrero, Gooding, Paino, Lemos-Giráldez, & Muñiz, 2014; Horan, Kring, & Blanchard, 2006; Lindenmayer, Harvey, Khan, & Kirkpatrick, 2007; Marder & Kirkpatrick, 2014; Pratt & Mueser, 2010).



### **Negative symptoms in the psychotic syndrome: historical development and conceptualisation**

When the Swiss psychiatrist Paul Eugen Bleuler (1911) first introduced the concept of schizophrenia, he stressed that the most characteristic symptoms of the disorder were not the symptoms of delusions and hallucinations these patients present -which Bleuler considered to be "accessory symptoms" - but rather the marked affective blunting, the inability to relate to others (autism), the alteration in the association of ideas (alogia) and the affective ambivalence. This definition of schizophrenia showed that the deficits were the most notable characteristics of the disorder. The term deficit has been traditionally used to describe a reduction in a variety of behaviours with respect to a hypothetically "normal" behaviour profile, such as facial expression, speech, pleasurable activities, and goal-directed activity. This set of symptoms and behaviours is called negative symptoms. Meanwhile, the positive symptoms refer to an excessive or distorted functioning of a "normal" process. Interestingly, in clinical practice and in taxonomic criteria, continuing the tradition of Schneider, greater weight is usually given to the assessment of the positive symptoms (e.g., hallucinations and delusions), perhaps in part because of the greater ease in identifying them and for diagnostic accuracy. This same aspect can be seen in psychological treatments, where the vast majority focus on the intervention on the positive symptoms (Elis, Caponigro, & Kring, 2013).

The factor models carried out, together with the literature review, show that negative symptoms are found in the following facets: social isolation, anhedonia, avolition, flat affect and alogia (Blanchard & Cohen, 2006). These five facets are grouped into two general areas, namely: a) Experiential or involving the environment (asociality, anhedonia and avolition), generally referred to as Avolition; and b) Expressive or Reduced emotional expression (affective flattening and alogia) (see Figure 1). In the DMS-5 a deconstruction of the negative symptoms has been produced, as well as the construct of psychosis itself, and it is recommended to assess and consider these two domains independently. Furthermore, the interest in the analysis and identification of these facets has not been uniform, with the role of anhedonia clearly receiving more attention (Horan et al., 2006).

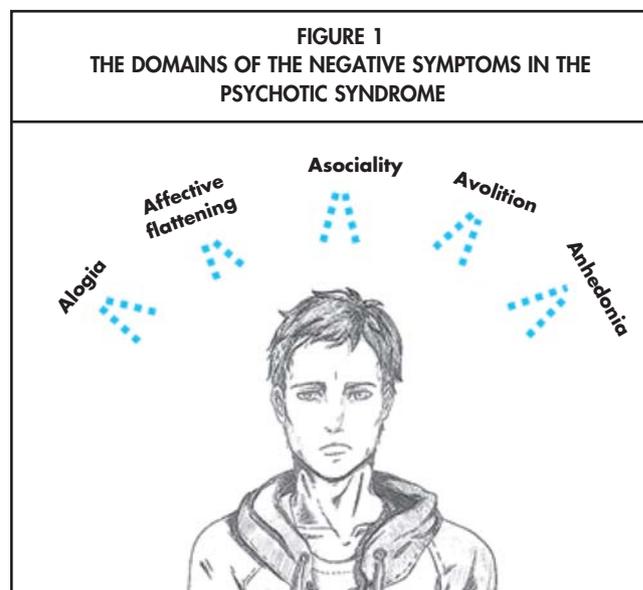
Negative symptoms are common in patients with psychosis (approximately 60% of them have at least one symptom) (Bobes, Arango, Garcia-Garcia, Rejas, & CLAMORS Study Collaborative Group, 2010), and in 10-

30% of cases the symptoms have a high magnitude and persistence (Buchanan, 2007), leading to deficit syndrome. Furthermore, these symptoms have a clear impact on occupational, family and social functioning, as well as on the patient's lifestyle and general health (García-Portilla González & Bobes, 2013). Negative symptoms have also been shown to be resistant to pharmacological treatment with antipsychotics (Leucht et al., 2009). At the same time, beyond the clinical boundaries, the presence of negative symptoms and, more specifically, anhedonia (or hypohedonia) is also considered to be a risk marker or an expression of latent vulnerability to psychosis (Docherty & Sponheim, 2014; Meehl, 1962).

### **The assessment of negative symptoms**

The interest in evaluating the negative dimension of psychosis has increased considerably in recent years thanks to a boost from the National Institute of Mental Health (NIMH) (Kirkpatrick, Fenton, Carpenter Jr, & Marder, 2006) and the result of various clinical and social needs. Until now the identification and assessment of negative symptoms was an area with major limitations and shortcomings. At the 2006 meeting of the NIMH, the working group for negative symptoms agreed on a set of guidelines needed to improve their understanding, identification and treatment. One of these guidelines was to develop new assessment tools that enable us to capture the construct with greater scientific assurance. Moreover, there was interest in having the new tools incorporate the

**FIGURE 1**  
**THE DOMAINS OF THE NEGATIVE SYMPTOMS IN THE PSYCHOTIC SYNDROME**



advances in the field of affective neuroscience, which suggest the distinction between anticipatory pleasure (associated more with dopamine) and consummatory pleasure (associated more with serotonin) (Berridge & Kringelbach, 2008; Gard, Kring, Gard, Horan, & Green, 2007).

The different tools for the assessment of negative symptoms can be classified into two generations (Kane, 2013; Marder & Kirkpatrick, 2014). The Positive and Negative Syndrome Scale (PANSS) (Kay, Fiszbein, & Opler, 1987) and the Scale for the Assessment of Negative Symptoms (SANS) (Andreasen, 1983) would be instruments belonging to the first generation. The Clinical Assessment Interview for Negative Symptoms (CAINS) (Kring, Gur, Blanchard, Horan, & Reise, 2013), the Brief Negative Symptom Scale (BNSS) (Kirkpatrick et al., 2011) and the Motivation and Pleasure Scale-Self-report (MAP-SR) (Llerena et al., 2013; Park et al., 2012) would correspond to the second generation. The 16-item Negative Symptom Assessment (NSA-16) (Axelrod, Goldman, & Alphas, 1993) would be a tool that is located halfway between the two generations. Overall, the second generation instruments have greater scientific rigour in terms of the construction and validation process, the psychometric studies carried out being more sophisticated and rigorous. Table 1 shows, schematically, the main characteristics of these measuring instruments.

### ***The assessment instruments of negative symptoms: first generation***

The PANSS (Kay et al., 1987) is an interview composed

of 30 items divided into three subscales: Positive symptoms, Negative symptoms, and General psychopathology. Specifically, the negative symptoms subscale explores the facets of social isolation, flat affect and amotivation, using 7 items. Each item is scored on a Likert scale of seven points, with 1 being the absence of the symptom and 7 referring to its presence with extreme severity. The PANSS enables the assessment of the schizophrenic syndrome, both from a dimensional perspective as well as a categorical. Recent factorial studies have found that a Bi-factor model consisting of a general dimension of psychosis plus five specific dimensions (positive, negative, disorganised, mania and depression) is the most appropriate for explaining its underlying dimensional structure (Reininghaus, Priebe, & Bentall, 2013). In the Spanish validation study, Peralta and Cuesta (1994) found that scores on the PANSS showed adequate psychometric characteristics. Subsequent studies carried out on clinical samples have found similar results supporting the use of this tool in research and clinical practice in the Spanish population (Fonseca-Pedrero, Gooding, et al., 2014; Rodriguez-Jimenez et al., 2013).

The SANS (Andreasen, 1983) is an interview designed to assess the severity of negative symptoms in psychosis. It consists of a total of 25 items divided into five domains, namely: Affective flattening, Alogia, Abulia-apathy, Anhedonia-social isolation and Impaired attention. The items are classified on a six-point Likert scale (0 = absent / not at all; 5 = severe / extreme). A score can be obtained for each item and for each group of symptoms, as well as a total severity score for each set of symptoms. The psychometric properties of the SANS have also been extensively analysed, finding adequate levels of reliability and different validity evidence (Fonseca-Pedrero, Gooding, et al., 2014; Lindenmayer et al., 2007). The factor analyses conducted to date indicate that SANS scores are grouped into two relatively independent dimensions, namely: Reduced emotional expression and Anhedonia / Social isolation. Despite its limitations (e.g., its excessive length or the fact that it includes the facet of attention within the negative symptoms), the SANS is one of the interviews recommended by the NIMH working group, and is in fact one of the most well-known measures. It has been adapted and validated in Spanish populations (Obiols, Salvador, Humbert, & Obiols, 1985) and its psychometric performance in clinical samples is adequate (Cascón & García Medina, 1997).

**TABLE 1**  
**COMPARISON OF MEASURING INSTRUMENTS FOR THE**  
**ASSESSMENT OF THE NEGATIVE SYMPTOMS**  
**(FROM DANIEL, 2013)**

	ANS	PANSS	NSA-16	BNSS	CAINS
Items	25	30	16	13	13
Response format	0-5	1-7	1-6	0-6	0-4
Time estimated (min.)	30	30-40	20-30	15	30
Structured interview	Yes	Yes	Yes	Yes	Yes
Explicit anchor points	Yes	Yes	Yes	Yes	Yes
Informant	No	Yes	No	No	No
Global score for domain	Yes	No	No	No	No
Global score	Yes	No	Yes	No	No

Note. SANS= Scale for the Assessment of Negative Symptoms; PANSS= Positive and Negative Syndrome Scale; NSA-16=16-item Negative Symptom Assessment; BNSS= Brief Negative Symptom Scale; CAINS= Clinical Assessment Interview for Negative Symptoms.



The NSA-16 (Axelrod et al., 1993) is a structured interview consisting of 16 items designed specifically for the assessment of negative symptoms in schizophrenia. The response format of the items is a six-point Likert scale (1 = not absent or normal functioning and 6 = absence or interference in functioning). The NSA-16 scores are grouped into a five-factor structure: Communication, Emotion / affect, Social involvement, Motivation and Retardation. There is a shortened version of the scale, consisting of 4 items (Alphs, Morlock, Coon, van Willigenburg, & Panagides, 2010). It has been used in various international studies as a standardised measure of negative symptoms in psychosis with adequate psychometric performance (Lindenmayer et al., 2007; Velligan, Alphs, Lancaster, Morlock, & Mintz, 2009).

#### ***The assessment instruments of negative symptoms: second generation***

The CAINS (Forbes et al., 2010; Horan, Kring, Gur, Reise, & Blanchard, 2011; Kring et al., 2013) is a measuring instrument that was developed recently for the assessment of the severity of negative symptoms in patients. It addresses the limitations of previous measures existing in the literature, incorporating current knowledge of affective neuroscience, and it provides a more extensive coverage of the negative symptoms. Specifically, the CAINS is a semi-structured interview that assesses the five dimensions of negative symptoms proposed by the consensus group, as mentioned previously (Asociality, Anhedonia, Avolition, Affective flattening and Alogia); it includes extensive instructions and follow up questions for each item in order to guide interviewers in its administration. The 13 items of the CAINS are answered on a five-point Likert scale (0 = no deficit and 4 = severe deficit), where higher scores reflect greater pathology; nine items evaluate motivation and pleasure, and four assess flat affect and alogia. Also, the items in the CAINS allow us to gather information on experiences of pleasure prior to the evaluation (previous 7 days) and also on the expectations of pleasure in the future (7 days later). The psychometric studies conducted to date, from both classical test theory and item response theory models, suggest that it may be a promising tool for assessing negative symptoms in patients with psychosis (Forbes et al., 2010; Horan et al., 2011; Kring et al., 2013). Work is currently underway to adapt and validate the CAINS into Spanish. There are also videos and training manuals available online that facilitate training

and standardisation in its use in clinical and research contexts.

[<http://www.med.upenn.edu/bbl/downloads/CAINSVideos.shtml>].

The BNSS (Kirkpatrick et al., 2011) is another newly constructed tool developed specifically for use in clinical trials. The interest in its development was to generate a brief, reliable and sensitive measuring instrument that could be used to measure the change of this set of symptoms in national and international clinical trials (associated with psychotropic drugs). The BNSS is a semi-structured interview consisting of 13 items organised into two subscales: Anhedonia / asociality / abolition and Restricted emotional expression. All items are rated on a seven-point Likert scale (0 = normal and 6 = extremely severe). The Brief Negative Symptoms Scale has several advantages, among which the following are notable: a) it is designed so that a doctor or a researcher can administer it easily; b) the administration time is approximately 15 minutes; c) it was constructed based on empirical criteria and considering the five aspects mentioned above; and d) the validation studies carried out indicate that the scores on the scale have adequate psychometric properties. The studies obtaining evidence of the internal structure found a two-dimensional structure (Motivation / pleasure and Emotional expressiveness). The reliability levels of the scores are satisfactory (Kirkpatrick et al., 2011). Also, although the instrument was initially designed for use in clinical trials, and because of its high test-retest reliability, it can also be used in repeated assessments in order to observe clinical changes in the severity of symptoms. The BNNS has recently been adapted and validated using a sample of 20 Spanish patients with psychosis, with adequate levels of inter-observer reliability, internal consistency and temporal stability being found as well as different validity evidence (Mané et al., 2014). An example of an item of the BNSS is presented in Table 2.

The Motivation and Pleasure Scale-Self-Report (MAP-SR) (Llerena et al., 2013; Park et al., 2012) is a measuring instrument consisting of 15 items (five-point Likert scale) that has been developed based on the CAINS. It was constructed with the aim of developing a self-report that measured precisely and rigorously the facets of motivation and pleasure associated with the negative psychotic symptoms. The preliminary version of this scale (called CAIN-SR) contained 30 items divided into a subscale of motivation / pleasure (abulia, anhedonia, asociality) and



another of emotional expression (flat affect, alogia). The previous version included nine items assessing the intensity and frequency of the experience of pleasure, both consummatory and anticipatory. Six items measuring asociality were also added. The preliminary psychometric studies showed high reliability for the total score, although the emotional expressiveness subscale had low levels of internal consistency, so the authors decided to remove the items. The findings of the final version suggest that the MAP-SR may be an interesting tool for the assessment of self-reported deficit of motivation and pleasure in patients with psychosis; however, it is necessary to conduct studies that justify its use, and its usefulness. Currently there are no available studies of adaptation and validation in the Spanish population.

### **The instruments for assessing high clinical and psychometric risk paradigms.**

One of the most promising lines of research in the field of psychosis is the early identification of individuals at risk or liability for this clinical disorder. The *leitmotiv* of this approach is based on the ability to identify, prior to the onset of the clinical condition, people that are at risk or vulnerable to develop psychosis, so preventive

prophylactic interventions can be performed. The mere possibility of detecting a case of psychosis in its early stages or before its appearance as a clinical disorder is encouraging. Longitudinal studies indicate that participants who present a high risk mental state (HRMS) are more likely to progress towards a psychotic disorder in the future (Fusar-Poli et al., 2012). Specifically, different authors have emphasised the role of attenuated negative symptoms in predicting the transition to psychosis in this set of participants (Valmaggia et al., 2013). In fact, the findings derived from different types of studies on HRMS are one of the main reasons for the inclusion of attenuated psychosis syndrome in the DSM-5 (Fusar-Poli, Carpenter, Woods, & McGlashan, 2014). At present there exists an assortment of tools that attempt to measure the vulnerability or risk condition for psychosis, all of which, to a greater or lesser extent, consider the negative dimension or some of its components (e.g., anhedonia). Basically, this group of tools is part of the paradigm of high clinical risk or ultra risk (e.g., HRMS or prodrome) or in the psychometric high-risk paradigm (e.g., schizotypy). A more comprehensive review of this group of tools can be found in previous reviews (Addington, Stowkowy, & Weiser, 2014; Fonseca-Pedrero et al., 2011; Fonseca-Pedrero et al., 2008; Kline & Schiffman, 2014; Lemos Giráldez et al., in press; Obiols et al., 2006).

For the assessment of negative symptoms in the prodromal states of psychosis or HRMS, the Structured Interview for Prodromal Syndromes (SIPS) / Scale of Prodromal Symptoms (SOPS) can be used (Miller et al., 2003) or the Comprehensive Assessment of At Risk Mental State (CAARMS) (Yung et al., 2005). These are, undoubtedly, the most used instruments. The SIPS is a semi-structured interview that includes the SOPS. The SOPS has 19 items that are organised thematically into four subscales (positive, negative, disorganised and general symptoms). All of the symptoms receive a Likert score ranging from 0 to 6, corresponding to the extremes of "absent" and "severe and psychotic" / "extreme". The SIPS / SOPS has shown high inter-judge reliability and internal consistency and adequate predictive validity. Specifically, the SOPS scores show a sensitivity of 100%, a specificity of 74% and a positive predictive value of 50% after one year and 67% after two years (Miller et al., 2003). In the validation study in the Spanish population (Lemos et al., 2006), three first-order factors were obtained, the most homogeneous and coincident with

**TABLE 2**  
**EXAMPLE OF AN ITEM FROM THE BRIEF**  
**NEGATIVE SYMPTOM SCALE**

ITEM 4: DISTRESS

**Probe Questions**

*What made you feel bad in the last week? Did anything happen that you didn't like? Did anything make you feel sad or depressed? Worried or anxious? Angry or irritated?*

**If nothing unpleasant happened:** *What has happened to you in the past that made you feel bad? How do you feel about that now?*

- 0. Normal: Normal ability to experience distress and unpleasant emotions.
- 1. Questionable: Less distress in the face of upsetting events than many people, but still within the range of normal.
- 2. Mild: Slightly less distressed than normal in the face of upsetting events.
- 3. Moderate: Definitely less upset than normal in the face of upsetting events, but does experience some distress.
- 4. Moderately severe: May experience significant distress, but usually a serious problem is necessary to elicit it.
- 5. Severe: Experiences only mild distress, even in the face of a serious problem.
- 6. Extremely severe: No experience of distress, no matter what problem is encountered.

Note. This item rates the subject's experience of unpleasant or distressing emotion of any kind: sadness, depression, anxiety, grief, anger, etc. The source of the distress is not considered; for instance, unpleasant emotions associated with psychotic symptoms are considered here.



previous research being the one that included negative symptoms. It was found that the SOPS subscales showed excellent positive predictive value, the negative symptoms being the ones that showed better indices of specificity (95.5%) and sensitivity (100%). The Spanish version of the SIPS / SOPS can be found at: <http://www.p3-info.es/PDF/SIPS-4Espanol.pdf>.

There are several interesting tools for the assessment of negative symptoms from the perspective of schizotypy or schizotypal personality, this perspective being commonly known as psychometric high-risk studies. Schizotypy refers to a latent personality organisation that predisposes to psychosis and its related disorders (Lenzenweger, 2010). This latent vulnerability may be present in the general population (about 10%). Participants with high scores on tests that assess schizotypy present deficits similar to those found in patients with psychosis (Ettinger, Meyhöfer, Steffens, Wagner, & Koutsouleris, 2014), as well as a greater theoretical risk to progress towards schizophrenia spectrum disorders (Gooding, Tallent, & Matts, 2005; Kwapil, Gross, Silvia, & Barrantes-Vidal, 2013). This vulnerability can be detected and identified by laboratory tests (e.g., tests of sustained attention) or by selecting participants who have high scores on psychometric tests (Lenzenweger, 2010).

Within the psychometric high-risk paradigm are the Scales of Psychosis Proneness (Kwapil, Barrantes Vidal, & Silvia, 2008) also known as the Chapman scales. Two of these are the Physical Anhedonia Scale (PAS) (Chapman, Chapman, & Raulin, 1976) and the Revised Social Anhedonia Scale (RSAS) (Eckblad, Chapman, Chapman, & Mishlove, 1982). They are classical measurement instruments in this field, considered by some as the "gold standard" and they are widely used. The Physical Anhedonia Scale includes 61 items that assess the difficulty in feeling physical and aesthetic pleasure through the senses (e.g., "the beauty of the sunset is highly overrated"). The Revised Social Anhedonia Scale consists of 40 items measuring asocial behaviour and indifference to interpersonal relationships, as well as difficulty in experiencing pleasure in social situations (e.g., "making new friends is not worth the energy required"). These tools have been validated in the Spanish population and present adequate psychometric properties (Fonseca-Pedrero, Paino, Lemos-Giráldez, Sierra-Baigrie, & Muñiz, 2010; Ros-Morente, Rodríguez-Hansen, Vilagrà-Ruiz, Kwapil, & Barrantes-Vidal, 2010). There is also an abbreviated version of the anhedonia scales,

which is of interest if you wish to gather information on this construct (Fonseca-Pedrero, Paino, Ortuño-Sierra, Lemos Giraldez, & Muñiz, 2013). In addition, as discussed above, Anhedonia has been a focus of particular interest on the part of therapists and researchers, possibly due to its historical trajectory in psychopathology or the studies carried out on the healthy relatives of patients (Kendler, 1985; Tarbox & Pogue-Geile, 2011).

For the specific assessment of hedonic capacity (as an indirect measure of anhedonia), there are tools that have been recently developed, such as the Temporal Experience of Pleasure Scale (TEPS) (Gard, Gard, Kring, & John, 2006) or the Anticipatory and Consummatory Interpersonal Pleasure Scale (ACIPS) (Gooding & Pflum, 2014). These tools are being widely used within a broad variety of subjects, and have been validated in both clinical and non-clinical samples. Psychometric studies support their use as indicators of hedonic capacity (Gooding, Cohen, & Pflum, 2014). Our research group has conducted the Spanish adaptation study of these two scales using samples of university students. The preliminary results, not yet published, relating to the psychometric properties, support their use in this context. Table 3 shows a comparison of the different measuring instruments that are available for the assessment of anhedonia or hedonic capacity.

It is worth noting that, within the dimensional model of psychosis, many of the instruments used in the general population can be used in the clinical population or the ultra-high risk population. For example, the scales of Physical and Social Anhedonia are frequently administered among patients with psychosis. On one part of the continuum, a reduction in the ability to experience pleasure could be seen as a marker of vulnerability to psychosis or as an attenuated psychotic experience (without a clear psychopathological and clinical significance), while the opposite extreme could be understood as a clinical symptom of the disorder. This dimensional structure of the psychotic phenotype is represented in Figure 2. As it can be observed, the phenotypic expression of psychosis is represented along a continuum of severity, ranging from what is assumed to be "normal" to the clinical condition. As one approaches the clinical end, there is an increased theoretical risk of transition to psychosis or another clinical entity (e.g., depression). Logically, the clinical expression depends on the interaction of genetic factors (e.g., family members



with psychosis) and environmental factors (e.g., stress, trauma, cannabis consumption). The boundaries for discriminating between the different types of expressions are blurred, both for determining the clinical threshold and for determining the subclinical threshold. Depending on each of the manifestations of the severity of the psychotic phenotype (e.g., distress, seeking treatment, duration and intensity) different types of populations can be categorised. The professional psychologist should select a certain type of measuring instrument, as well as a specific prevention or intervention strategy, depending on the case.

Among the instruments for assessing this construct are the Oxford Liverpool Inventory of Feelings and Experiences (O-LIFE) (Mason, Claridge, & Jackson, 1995), the Schizotypal Personality Questionnaire (SPQ) (Raine, 1991), and the Community Assessment of Psychic Experiences-42 (CAPE-42) (Stefanis et al., 2002). All of these have been validated in the Spanish population (Álvarez-López, 2005; Fonseca-Pedrero, Fumero, et al., 2014; Fonseca-Pedrero, Paino, Lemos-Giráldez, & Muñiz, 2012; Obiols, Barragán, Vicens, & Navarro, 2008; Ros-Morente, Vilagra-Ruiz, Rodriguez-Hansen, Wigman, & Barrantes-Vidal, 2011). There are also instruments that include assessment of the Anhedonia dimension of schizotypy in Spanish adolescents. One example of these is the Oviedo Questionnaire for the Assessment of Schizotypy [Cuestionario Oviedo para la Evaluación de la Esquizotipia] (ESQUIZO-Q) (Fonseca-Pedrero, Muñiz, Lemos-Giráldez, Paino, & Villazón-García, 2010). The ESQUIZO-Q is a self-report developed for the assessment of schizotypal traits that can

also be used for epidemiological purposes. The ESQUIZO-Q consists of a total of 51 items in Likert format of five categories based on the degree of adherence, grouped into ten subscales and three general second-order dimensions: Distortion of reality, Anhedonia and Interpersonal Disorganisation. The psychometric properties analysed in representative samples of adolescents support its use in the evaluation of the Anhedonia facet of schizotypy (Fonseca-Pedrero, Muñiz, et al., 2010).

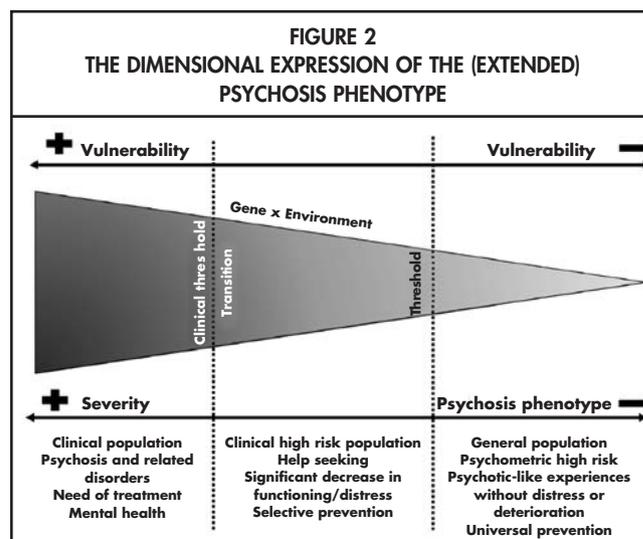
**RECAPITULATION**

Deficits in affective expression are a central aspect of the psychotic spectrum disorders. The assessment of the negative symptoms is a complex and interesting subject that is currently experiencing a growth in activity; one need only look back and survey the tremendous advances that have occurred in recent years. Currently, although there are highly sophisticated diagnostic tools and evidence (e.g., neuroimaging techniques), assessment of the clinical condition is still based, fundamentally, on descriptive psychopathology and the use of clinical interviews and scales. However, it is equally true that there is a growing interest in evaluating negative symptoms (or some of their components) using biomarkers within a translational strategy (Wolf et al., 2014), using objective tests such as discourse analysis or the analysis of nonverbal vocal expressions (Cohen, Mitchell, & Elvevåg, 2014) or procedures where the individual has to report on their experiences in the real context (experience sampling method) (Oorschot, Kwapil, Delespaul, & Myin-Germeys, 2009). On the other hand, some of the facets

**TABLE 3**  
**COMPARISON OF MEASURING INSTRUMENTS FOR THE ASSESSMENT OF ANHEDONIA**  
(MODIFIED FROM GOODING ET AL., 2014)

	SAS	PAS	TEPS	ACIPS	MAP-SR
Number of items	40	61	18	17	15
Direct measure of anhedonia	Yes	Yes	No	No	Yes
Appropriate for patients	Yes	Yes	Yes	Yes	Yes
Appropriate for nonclinical samples	Yes	Yes	Yes	Yes	No
Brevity	No	No	Yes	Yes	Yes

Note. SAS= revised Social Anhedonia Scale; PAS= revised Physical Anhedonia Scale; TEPS=Temporal Experience of Pleasure Scale; ACIPS= Anticipatory and Consummatory Pleasure Scale; MAP-SR= Motivation and Pleasure Scale-Self Report





of negative symptoms, such as anhedonia, are the subject of intense analysis, debate and reconceptualisation (Ritsner, 2013; Strauss & Gold, 2012), which is generating new forms of measurement and evaluation.

Logically the evaluation of negative symptoms should be integrated within a holistic perspective, which considers the psychotic syndrome and the involvement of its numerous psychopathological domains. Furthermore, it should include different levels of analysis (e.g., genetic, biological, neuropsychological, and psychological). It is necessary to consider multiple informants and explore both the subjective and objective aspects (performance tests) of the patient. The assessment of negative symptoms should not only focus on the acute stages of the disorder, but also on the pre- and post-psychotic stages. In addition, the professional psychologist must bear in mind a wide variety of associated factors and modulating variables that interact continuously throughout the whole process of assessment and treatment of primary psychotic symptoms and secondary ones, such as the level of awareness of illness, the degree of adherence to the treatment, the social and family context, or the socioeconomic status of the patient.

Advances in the conceptualisation and assessment of negative psychotic symptoms help the professional not only in a more rigorous assessment of the symptoms, but also in the design and planning of treatment interventions and rehabilitation. It is noteworthy that the evaluation of these symptoms, in the clinical setting, must have a specific goal: rehabilitation. This aspect is particularly important in psychotic patients with a predominance of negative symptoms, which are more resistant to treatment, more stable and persistent over time, and have a negative impact on the psychosocial functioning of the patient. In Spain it seems that since the psychiatric reform, the health authorities have forgotten to alleviate or halt these symptoms, which were formerly called "defective" and about which much more is known now. In fact there are few programs and resources dedicated to this purpose. Possibly in our country this has been an unresolved matter for too many years and, although there have been studies on this subject, there are few clinicians that have made proposals to work on these aspects of the disorder. Surely relapse – and therefore further hospitalisations – could be prevented, appropriate medication would be guaranteed, the risk behaviours of patients would decrease, etc. All of this would, undoubtedly, have repercussions at the individual, family, society, healthcare and economic

levels. There is no doubt that in this field (and elsewhere), the role of the psychologist is fundamental.

Promising studies on the paradigms of high clinical and psychometric risk suggest that it is increasingly likely that it will be possible to anticipate the debut of psychosis. These findings should give pause to the professionals, the social and health institutions and the governments that manage them, regarding the need to direct more efforts into prevention and early intervention in psychosis. For example, in Spain, where education is compulsory until age 16, it would be possible to detect the population at risk or ultra-high-risk in schools. Increased efforts in this direction would enable the monitoring, intervention and closer follow-up of adolescents that are at higher risk and, why not, could prevent the potentially damaging consequences of a first psychotic episode. The evidence suggests that this is not only possible, but also that it would be effective and efficient.

The advances in the definition of psychosis and its assessment are clear. Although pathognomonic markers are currently not available, and diagnosis is based at a merely descriptive and phenomenological level, an atmosphere of change is perceived among mental health professionals. The categorical models are beginning to make way for hybrid models, in which the psychopathological dimensions are considered. The models based on healing are beginning to make way for preventive models and specific and individualised interventions based on stages. The models based on clinical observation are beginning to give way to approaches grounded in neuroscience that attempt to relate specific psychopathological dimensions with neurobiological substrates (e.g., RDoC criteria). The assessment of psychosis is contributing to all of these changes, itself being subject to progress and evolution. As it can be observed, the changes that have occurred in recent years in the assessment of psychosis have been considerable, although those that are still to come will be even more relevant.

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