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## **SHORT FORM OF THE PORTUGUESE VERSION OF THE POSITIVE AND NEGATIVE AFFECTION SCHEDULE IN PEOPLE WITH SCHIZOPHRENIA: PSYCHOMETRIC CHARACTERISTICS**

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## ABSTRACT

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**Objective:** to analyze the psychometric properties of the short form of the Portuguese version of the *Positive and Negative Affect Schedule* in people with schizophrenia.

**Methods:** a Psychometric study was carried out, in a convenience sample, composed of 282 people with the diagnosis of schizophrenia. The psychometric properties were evaluated: validity (construct, criterion) and reliability (Cronbach's  $\alpha$ ) of the Portuguese short version of the Positive and Negative Affect Schedule. The criterion validity was used by WHOQOL-Bref.

**Results:** the Portuguese short version of the Positive and Negative Affect Schedule has two distinct dimensions of positive affect ( $\alpha=0.86$ ) and negative affect ( $\alpha=0.82$ ). The two dimensions of positive and negative affect are associated with health-related quality of life.

**Conclusions:** the Portuguese short version of the Positive and Negative Affect Schedule has similar psychometric properties to the original, being valid and reliable in people with schizophrenia. This scale is appropriate to be applied both in the clinical context and research in this population.

**Keywords:** emotion; schizophrenia; validation studies; psychometrics; nursing.

## INTRODUCTION

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Schizophrenia is one of the most serious mental disorders and affects around 20 million people worldwide. It is an important health problem, which has implications for the quality of life of the person who experiences it and for their families<sup>(1-2)</sup>.

According to the most recent version of the American Psychiatric Association's Diagnostic and Statistics Manual for Mental Disorders, version 5, (DSM 5), schizophrenia is diagnosed when, in a minimum period of 6 months, the following symptoms exist: delusions, hallucinations, negative symptoms (decreased emotional expression, avolition, allegiance, anhedonia, social isolation, among others), disorganized thinking and/or behavior. Often, behavioral and emotional changes occur, which can lead to severe social and occupational functioning. With regard to social factors, most people remain single, without any partner and with limited social contacts, mainly outside the family network. As with any mental disorder, it is necessary to exclude the hypothesis that the symptoms are caused by the effects of some substance or organic condition<sup>(3)</sup>.

This symptomatology and its associated factors have a negative impact on quality of life, not only in people with schizophrenia, but also in the family and the community to which they belong<sup>(4)</sup>. The subjective experience of well-being in people with schizophrenia is an important factor associated with adherence to therapy, quality of life, functionality and prognosis<sup>(5)</sup>. Subjective well-being is characterized by emotional responses, satisfaction and judgment about overall satisfaction with life. The elements that constitute subjective well-being are positive affection (joy, contentment, pride, affection and happiness); negative affect (guilt, shame, anxiety, worry, anger, stress and depression); satisfaction with life, which is evaluated by the desire for change, satisfaction with current, past and future life, and even a satisfaction domain, in which an appreciation is made of work, family, leisure, health, finances and self-development<sup>(6)</sup>.

With regard to affectivity, people with schizophrenia usually have an increased negative affect and a reduced positive affect in relation to healthy people<sup>(7)</sup>. In addition, increased levels of negative affect can be a risk factor for alcohol and other drug abuse, both common in patients with psychosis<sup>(8)</sup>.

The Positive and Negative Affect Schedule (PANAS) is a scale that was developed by Watson, Clark and Tellegen<sup>(9)</sup> to measure general dimensions that describe the affective experience of individuals, Positive Affect (PA) and Negative Affect (NA). High NA reflects subjective displeasure and malaise, namely, emotions such as fear, nervousness and disturbance. Elevated PA refers to subjective pleasure and well-being, which includes emotions such as enthusiasm, inspiration and determination. The PANAS scale can be used as a measure of the affective dimension of the concept of Subjective Well-Being<sup>(10)</sup>.

PANAS has been validated in various cultures and in different languages around the world (English, German, Turkish, Estonian, Spanish, Russian, Japanese) and the results of these validations have shown good psychometric qualities (construct validity, convergent and discriminating)<sup>(11)</sup>. The 20-item version in European Portuguese<sup>(12)</sup> and the reduced version of 10 items<sup>(11)</sup> also have good psychometric properties.

As well-being is a dimension of quality of life, and given that the presence of positive and negative symptoms of schizophrenia has an association with worse levels of quality of life<sup>(13)</sup>, using subjective well-being as a valid, reliable measure and efficient, can be useful for measuring nursing and health outcome indicators.

In this sense, the following research question was formulated: what are the psychometric properties of the reduced version of the Portuguese scale Positive and Negative Affect Schedule in people with schizophrenia? The aim of the present investigation was to analyze the psychometric properties of the short form of the Portuguese version of the *Positive and Negative Affect Schedule* in people with schizophrenia.

## METHOD

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It is a psychometric study with a sample of 282 people with a clinical diagnosis of schizophrenia, from nine health institutions in Portugal. The inclusion criteria were people with a clinical diagnosis of schizophrenia, over 18 years-old, and able to understand the objectives of the study. The selection of the sample was made by convenience, and they chose participants who were at the time of data collection at the unit or service; the nurse or psychiatrist referred them. The data collection happened between January 2015 and March 2016 by two researchers who were trained for the purpose, and followed the same procedures.

As a data collection instrument, a sociodemographic and clinical questionnaire (gender, age, marital status, education, cohabitation, work occupation, number of hospitalizations, duration of pathology, substance use) was used and the following scales: quality assessment instrument of the World Health Organization (WHOQOL-Bref)<sup>(14)</sup> and PANAS reduced version<sup>(11)</sup>.

WHOQOL-Bref is a quality of life assessment scale that can be administered to healthy or pathological people. It was created by a group of researchers from the World Health Organization in 1997, and consists of 26 items that are divided into four domains: physical, psychological, social relations and the environment. Each item is measured using a 5-point Likert scale. The Portuguese validation was carried out in 2007, by Canavarro and collaborators, with good psychometric properties (Cronbach's Alpha of 0.92)<sup>(14)</sup>.

The PANAS scale<sup>(9)</sup> was translated and adapted for the Portuguese population, and it is composed of two subscales: positive affect (AP) and negative affect (AN). The items are assessed on a Likert scale from 1 to 5<sup>(15)</sup>. The short form of the Portuguese version of the Positive and Negative Affect Schedule (PANAS-VRP) consists of the items: enthusiastic, inspired, determined, interested and active, to obtain the AP dimension, and items scared, frightened, tormented, nervous and guilty, allows to constitute the AN dimension<sup>(11)</sup>. The dimensions AP and AN are more present the higher the score, that is, a maximum of 25 points. The PANAS-VRP had an internal consistency of  $\alpha=0.86$  on the AP scale and  $\alpha=0.89$  on the AN scale<sup>(11)</sup>, similar to the original<sup>(12)</sup>.

This study followed the recommendations of the Declaration of Helsinki and the Oviedo Convention, the National Data Protection Commission (approval No. 843/2015) and the ethics committees of the institutions where the data were collected have approved it.

All the principles for an investigation involving human beings were respected. The participants signed the informed and free consent, what ensures data confidentiality. The participants were informed about the objectives of the study, collection, treatment of data, purposes of the investigation, using no data that identified them. In addition, they knew that they could quit at any time, without any penalty. The data collection occurred in person and individually, in a private room, using paper questionnaires. The answers were encrypted and there was no element of identification in them, thus guaranteeing the anonymity and confidentiality of the data.

The Statistical Package for Social Sciences (SPSS) version 24.0 for Windows was used for data analysis. In the study of psychometric properties, the reliability of the scale was calculated using Cronbach's  $\alpha$ . The minimum value adopted for internal consistency was 0.70, also having as a reference that the values between 0.70 and 0.90 are considered good<sup>(15-16)</sup>. Regarding validity, this was done using exploratory factor analysis (AFE), using the principal component analysis method, with Varimax rotation. The Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity test were used to test suitability. The items were distributed by the factors taking into account that the difference between the values of the factor loads exceeds the value of 0.20<sup>(15-16)</sup>. Pearson's correlation ( $r$ ) was also used. The discriminating validity of the items was done with the sub-dimensions and criterion validity between the PANAS-VRP and the quality of life scale. The criterion value considered was of correlation values below 0.60, for not to predict a score of more than one third of the other. Categorical variables were expressed as percentages or absolute values, and continuous variables were analyzed taking into account the mean and standard deviation. The level of significance considered was  $p < 0.05$ .

## RESULTS

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A sample of 282 people with a diagnosis of schizophrenia from different areas of continental Portugal (38.7% south; 34.7% north and 26.6% center) was obtained, with an average age of 46.15 ( $\pm 13,12$ ) years-old. The majority were male (60.3%), single (67.4%) and disabled (61.7%). Clinically, 49.29% had been diagnosed with schizophrenia less than 20 years ago and 52.5% had abused substances (alcohol, tobacco or other drugs).

### Reliability

In the analysis of the psychometric properties, the reproducibility of the PANAS-VRP, verified through Cronbach's  $\alpha$  coefficient, in the AP ranged from 0.81 to 0.84 and in AN it ranged from 0.74 to 0.81, after exclusion of each of the items. Cronbach's  $\alpha$  coefficient for AP was 0.86 and for AN was 0.82.

### Validity

Exploratory factor analysis (KMO=0.82; Bartlett  $\chi^2$  sphericity test [45] 1216.635;  $p < 0.0001$ ) showed two factors, which are responsible for 61.5% of the explained variance of the construct. Communalities vary between 0.445 and 0.754. The first factor, "negative affectivity", includes five items, which have an internal consistency of 0.82 and explains 39.36% of the total variance. The second factor, "Positive affectivity", includes the remaining five items, with an internal consistency of 0.86, explaining 22.14% of the total variance (Table 1).

Table 1 - Exploratory factor analysis of the PANAS-VRP in people with schizophrenia. Portugal, 2016. (N=282).

	Factor 1 Negative affectivity	Factor 2 Positive affectivity	$h^{2\ddagger}$
1. Interested		0.804	0.653
2. Tormented	0.761		0.621
3. Guilty	0.683		0.467
4. Scared	0.863		0.754
5. Enthusiastic		0.760	0.589
6. Inspired		0.797	0.643
7. Nervous	0.631		0.445
8. Determined		0.841	0.715
9. Active		0.760	0.617
10. Frightned	0.803		0.647
Own numbers ( <i>Eigenvalue</i> )	3.936	2.214	
Explained variance	39.36%	22.14%	
Coefficient $\alpha^*$	0.82	0.86	
Mean (DP $\dagger$ )	10.8 ( $\pm 4.3$ )	15.5 ( $\pm 4.1$ )	

\* $\alpha$ : Cronbach's  $\alpha$ ;  $\dagger$ DP: Standard deviation.  $\ddagger$ : Communalities.

Source: Authors.

The factor load of the PANAS-VRP items for people with schizophrenia is high, ranging between 0.631 and 0.863. The “negative affectivity” factor is what best explains the result with about half of the total variance explained.

The discriminating validity of the PANAS-VRP items for people with schizophrenia is shown in table 2. The item discrimination index is greater than 20 points between the magnitude of the correlation with the scale to which it belongs (in bold).

Table 2 - Discriminant validity of items of the PANAS-VRP in people with schizophrenia. Portugal, 2016. (N=282).

	Factor 1 Negative Affectivity	Factor 2 Positive Affectivity
1. Interested	-0.205*	<b>0.803†</b>
2. Tormented	<b>0.786†</b>	-0.291†
3. Guilty	<b>0.692†</b>	-0.111
4. Scared	<b>0.843†</b>	-0.222†
5. Enthusiastic	-0.216†	<b>0.770†</b>
6. Inspired	-0.203*	<b>0.806†</b>
7. Nervous	<b>0.694†</b>	-0.276†
8. Determined	-0.215†	<b>0.838†</b>
9. Active	-0.290†	<b>0.789†</b>
10. Frightened	<b>0.777†</b>	-0.163*

\*p<0.01; †p<0.001.

Pearson's correlation was performed to assess the existing correlations between the total score of the PANAS-VRP and the scores of each dimension that compose it (table 3). It was found that the total score of the PANAS-VRP presented a strong correlation between positive affectivity (r=0.574; p<0.001) and negative affectivity (r=0.624; p<0.001).

Table 3 – Correlation between the subscale scores and the total score of the PANAS-VRP in people with schizophrenia. Portugal, 2016. (N=282).

PANAS-VRP	Total scale	Positivity Affectivity
Total scale		
Positive Affectivity	0.574*	
Negative Affectivity	0.624*	-0.282*

\*p<0.001.

To analyze concurrent validity, the WHOQOL-Bref was used, taking into account its domains, obtaining significant positive correlations between positive affectivity and the quality of life domains, on the other hand, correlations were obtained significant negative effects between negative affectivity and the quality of life domains (table 4).

Table 4 – Correlation between the scores of the PANAS-VRP and the criterion measures (WHOQOL-Bref) in people with schizophrenia. Portugal, 2016. (n=282).

	Positive Affectivity	Negative Affectivity
Physical Domain	0.611*	-0.504*
Psychological Domain	0.679*	-0.504*
Social Relations Domain	0.514*	-0.388*
Environment Domain	0.444*	-0.391*
General Domain	0.471*	-0.476*

\*p<0.001.



## DISCUSSION

In answering the research question of this study “what are the psychometric properties of the short form of the Portuguese Positive and Negative Affect Schedule Portuguese version in people with schizophrenia?”, it was found that the internal reliability values are identical to the original version of the scale<sup>(12)</sup>, of the short form of the Portuguese PANAS in healthy people<sup>(11)</sup> and with chronic kidney disease<sup>(17)</sup>. The  $\alpha$  values obtained are considered good (0.80-0.90)<sup>(15-16)</sup>. Regarding the construct validity, the KMO results are considered good (0.80-0.90)<sup>(15-16)</sup>.

Regarding the analysis of the main components, all items were loaded into factors, with appropriate factor loads (that is  $>0.30$ ). The factorial weights were identical to the PANAS-VRP, the items were loaded in two factors<sup>(11)</sup>.

In the analysis of concurrent validity, it was found that the PANAS-VRP obtained positive correlations between the AP with all WHOQOL-Bref domains, and negative correlations between the AN with the same domains of the quality of life scale.

Thus, the psychometric properties of the PANAS-VRP for people with schizophrenia are, globally, in agreement with the original scale<sup>(9)</sup>, allowing obtaining valid and reliable measures of positive and negative affectivity.

### *Practical implications*

Schizophrenia affects all areas of a person's life, with affectivity as an important factor in this pathology<sup>(18)</sup>. Therefore, the validation of a short scale that evaluates positive and negative affect becomes an important tool to be used by mental health specialist nurses, given the importance of using measurable assessment instruments as an adjunct to diagnostic assessment in psychiatry, as well as for evaluating therapeutic intervention<sup>(19)</sup>.

To optimize medication adherence, it is important to use measures that assess well-being<sup>(20)</sup>, so that, when the PANAS-VRP is validated for people with schizophrenia, it is possible to use it in clinical practice as an adjunct to this optimization.

People with severe mental illnesses, including schizophrenia, have lower levels of well-being compared to people without illness<sup>(21)</sup>. In the same sense, people with schizophrenia have a low quality of life<sup>(22)</sup>, so it is important to pay a special attention to this variable when planning interventions to promote well-being<sup>(21)</sup>. The validation of the PANAS-VRP makes a contribution and can be used to assess negative and positive affect before and after interventions. These interventions should include encouraging the use of acti-

ve strategies to deal with stigma in order to reduce the perception of subtle or indirect discrimination, since they will improve the perception of well-being in people with schizophrenia<sup>(23)</sup>. It is also important to promote the autonomy of people with schizophrenia, avoiding the degradation of their quality of life<sup>(24)</sup>, given its connection with well-being and health. In addition, integration in the community, with family and social support, is essential<sup>(25)</sup>, with community mental health teams playing a key role<sup>(24)</sup>.

#### *Limitations*

As limitations of this study, they've been considered the type of sampling for convenience and the type of study (cross-sectional) that did not allow verifying the stability of the scale.

## CONCLUSION

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The PANAS-VRP has good psychometric properties for people with schizophrenia, being valid and reliable, being able to be used both in the clinical context and for research purposes. Being a scale with only 10 items, it has the advantage of being easy and quick to use.

The dimension of positive affectivity has a positive relation with the dimensions of quality of life related to health, while the dimension of negative affectivity has a negative association with the dimensions of quality of life related to health.

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