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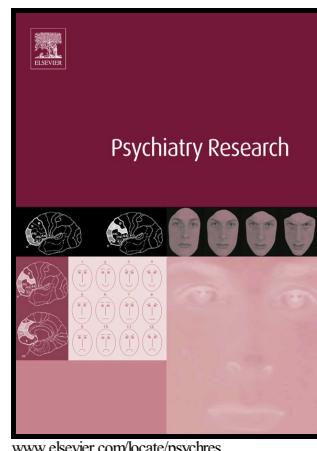
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Validation of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) in French

Psychiatric and General Populations

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Abstract

The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) has been validated in general population samples in many countries. Interest in using this measure in clinical populations is growing, particularly for tertiary prevention and mental health promotion. This paper reports validation of the French WEMWBS in healthy and chronic remitted schizophrenia populations.

The French WEMWBS was administered to 319 workers, 75 students and 121 patients. For non-patients, self-reported Trait- and State-Anxiety, Mindfulness, Positive and Negative Affect and the General Health Questionnaire were completed. For patients, the Positive and Negative Syndrome Scale, Clinical Global Impression Severity Scale, Birchwood Insight Scale, Social Adjustment Scale, and Global Assessment of Functioning scale were completed. Test-retest reliability and responsiveness to intervention was assessed at 6 months.

Whatever the sample, response frequencies showed normal distributions, and internal consistency was good (Cronbach's α). Scree plots of eigenvalues suggested a single factor in the samples. The one-dimensional solution yielded suboptimal fit indices. Construct validity was confirmed. Significant improvement in scores was observed before and after intervention. Test-retest variation was non-significant.

Impairment of insight and cognition in the assessed patients implies that attention must be paid before applying WEMWBS to all patients. Nevertheless, WEMWBS proved valid and reliable in a further European population, suggesting transcultural validity for both monitoring

and evaluation of interventions in healthy as well as chronic remitted schizophrenia populations.

1. Introduction

Interest in the concept of well-being and its contribution to all aspects of human life is increasing. According to the World Health Organization (WHO, 2004), the "foundation for well-being and effective functioning for both the individual and the community" is "positive mental health." This term and the term "mental well-being" are now used interchangeably, and cover both affect and psychological functioning (WHO, 2001). Mental well-being allows "individuals to realize their abilities, cope with the normal stresses of life, work productively and fruitfully, and make a contribution to their community" (Ryan & Deci, 2001). It includes the capacity for mutually satisfying and enduring relationships (Tennant et al., 2007), and has major consequences for health and social outcomes (Ryan & Deci, 2001; Tennant et al., 2007). As such, it is of relevance to recovery and tertiary prevention in patients with psychiatric disorders.

Existing instruments in the field of mental health were developed mainly to detect and measure mental illness. Their value for monitoring mental well-being and evaluating interventions to promote positive mental health is limited because of ceiling effects in general population samples. Such measures may also interfere with interventions that focus on the positive (e.g. recovery, positive psychology, asset-based or solution-focused approaches), by giving the impression that the interest of providers is not primarily the promotion of well-being but rather the prevention of illness, together with its social and economic costs.

Within the context of these limitations, UK researchers developed an instrument, the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; Tennant et al., 2007; http://www2.warwick.ac.uk/fac/med/research/platform/wemwbs/). This instrument covers both affective constructs, including the experience of happiness, and constructs representing psychological functioning and self-realization (Keyes, 2007). Its development focused entirely on positive constructs, resulting in a scale in which all items were positive and which was short enough to be useful in population-level surveys. WEMWBS comprises 14 items relating to the previous two weeks, with responses on a 5-point scale (from "none of the time" to "all of the time").

WEMWBS has been validated for use in the UK with general populations aged 13 and above, and found to have good properties (Tennant et al., 2007; Clarke et al., 2011; Lloyd and Devine, 2012; Maheswaran, Weich, Powell & Stewart-Brown, 2012; Taggart, Friede, Weich, Clarke, Johnson & Stewart-Brown, 2013). Scores showed a single underlying factor, interpreted as mental well-being, with adequate social desirability bias. WEMWBS and its short version (SWEMWBS) (Stewart-Brown et al., 2009) have been validated in a wide range of languages and populations including Spanish (Castellvi et al., 2014), Italian (Gremigni & Stewart-Brown, 2011), Brazilian Portuguese (Santos et al., 2015) and Chinese (Ng et al., 2014), and its sensitivity to change has been demonstrated in observational studies (Maheswaran et al., 2012). The scale is suitable for monitoring mental well-being in healthy populations as it shows few ceiling or floor effects.

Although the scale is popular with psychiatric patients and their carers (Crawford et al., 2011), and has been deemed appropriate and relevant for people with psychosis and mood disorders (Mental Health Research Net, 2010), it has not yet been validated in psychiatric populations. Given the value of tertiary prevention in psychiatry (the prevention of relapse) and the new evidence base focusing on well-being in people experiencing chronic mental

illness (Keyes, 2007), it is important that WEMWBS is validated in psychiatric populations. Cognizance of debates about the influence of lack of insight (Cynthia et al., 2015) and cognition (Reininghaus and Priebe, 2012) on the validity of patient-reported outcome measures (PROMS) in psychiatric populations, particularly those with schizophrenia, should not mask the call (Reininghaus and Priebe, 2012) for better validation of patient-reported outcome measures in psychiatry, especially short measures like WEMWBS.

The aim of the present study is to contribute to the validation of WEMWBS in three ways: first by evaluating the psychometric properties of the French translation (WEMWBS) in two healthy population samples, second by evaluating the psychometric properties of WEMWBS in a population with chronic psychiatric disorder and third by evaluating whether the scale appears sensitive to change after interventions designed to promote mental well-being in both healthy and psychiatric populations.

2. Methods

Translation of WEMWBS into French

The process of translation into French was completed in two steps. First, a committee of four collaborators fluent in both French and English reviewed and revised a first translation of the scale, resolving translation difficulties by consensus. Second, a back-translation (French to English) was undertaken by three bilingual English native speakers who had no knowledge of the original version. This translation/back-translation process was repeated twice, with committee evaluation and recommendations being made between the two processes. At each stage, two experts in the field of psychological assessments (French and English experts) were asked to examine the translation of each specific item.

Subjects

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Three populations were included: two healthy population samples composed of students (STUDENTS) and working adults (WORKERS), and one psychiatric population composed of patients with remitted schizophrenia (PATIENTS). STUDENTS was a convenience sample of 75 first year students (51 females and 24 males); with 45 from a school of business management and 30 from a medical university. WORKERS was a convenience sample of 319 working adults (63 females and 256 males), including 217 soldiers from Paris Fire Brigade, 93 nurses and 9 individuals from a research laboratory. PATIENTS was composed of 121 remitted schizophrenia patients (39 females and 82 males) who were all clients of the rehabilitation center for psychotic disorders (Le Vinatier Hospital, Lyon, France).

Potential participants were excluded from the STUDENTS and WORKERS samples if (i) they were undergoing medical treatment for psychological issues at the time of the study or (ii) they had taken part in a stress management program prior to recruitment for the current study. Potential participants in PATIENTS were included if (i) a DSM-IVR diagnosis of schizophrenia as confirmed by the Mini International Neuropsychiatric Interview for DSM-IV (MINI; Lecrubier et al., 1997) had been confirmed; (ii) they were aged between 18 and 65 years; and (iii) were clinically stable at the time of recruitment, defined as no hospitalization or increases in medication as a result of an exacerbation of acute symptoms over the previous three months.

Recruitment and data collection:

STUDENTS and WORKERS received a cover letter supported by their respective board or supervisory staff, inviting participation in the study and stating the exclusion criteria. PATIENTS recruitment was supported by medical staff who directly invited their patients to participate in the study over a period of 6 months.

The study was conducted in accordance with all applicable regulatory requirements, including the 1996 version of the Declaration of Helsinki, and approved by the ethics committee of the

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French Health Service. The identifier for ClinicalTrials.gov is NCT02325115. All volunteers provided written informed consent before participation.

WEMWBS was administered in a booklet of questionnaires comprised of common socio-demographic and psychological questionnaires. Responses were excluded if socio-demographic and WEMWBS questionnaires were not fully completed (3%). STUDENTS and WORKERS participants not taking part in interventions were invited to complete F-WEMWBS for a second time 6 months after the first completion to assess temporal stability.

Sensitivity to change

Fifty-four participants drawn from both STUDENT and WORKERS samples agreed to take part in Cardiac Coherence Training (CCT). CCT incorporates a series of emotion-refocusing and restructuring techniques developed by the Institute of HeartMath (Boulder Creek, CA) involving biofeedback to control heart rate variability – the moment-to-moment change in heart rate (McCraty, 2001). This practice has been shown to improve health through adjustments to the autonomic nervous system (McCraty, Atkinson, Tiller, Rein & Watkins, 1995; McCraty, Barrios-Choplin, Rozman, Atkinson & Watkins, 1998), and to produce a general feeling of wellness (Barrios, McCraty, R. & Cryer, 1997). These participants completed WEMWBS again at 6 months.

PATIENTS were included in a Cognitive Remediation Program (CRP), an evidence-based, non-pharmacological treatment for the neurocognitive deficits seen in schizophrenia (Harvey & Sharma, 2002; Hogarty et al., 2004; Demily & Franck, 2008). In the rehabilitation center, cognitive remediation (targeting neurocognition, metacognition and social cognition), is combined with psychoeducation, cognitive skills training and family support. Twenty participants (16.5% of those completing WEMWBS in the first stage of the study – the week before the first CRP session) completed assessments six months after the start of the program.

Questionnaires

Socio-demographic data included age, ethnicity, gender, educational level, occupational category and marital status.

STUDENTS and WORKERS assessments:

Self-report trait and state anxiety were assessed using the French version of the Spielberger State-Trait-Anxiety Inventory (40-item STAI, Spielberger, 1975; 1993; Bruchon-Schweitzer & Paulhan, 1993). In the state portion of the scale, 20 items allow participants to report the extent of their anxiety at particular moments. In the trait scale, the 20 items allow respondents to indicate the intensity of their anxiety in general. Both scores were computed in this study. Medium sized, negative correlations between WEMWBS and anxiety-trait and -state were predicted.

Mindfulness levels were assessed using the French version of the short form of the self-report Freiburg Mindfulness Inventory (14-item FMI), which has been developed for people with no background knowledge about mindfulness (Walach, Buchheld, Buttenmüller, Kleinknecht & Schmidt, 2006). It is considered as one-dimensional for practical purposes (Walach et al., 2006; Kohls, Sauer & Walach, 2009; Trousselard et al., 2010). Medium positive correlations between WEMWBS and mindfulness were predicted.

The self-report Positive and Negative Affect Schedule consists of two scales assessing positive and negative affect, respectively (20-item PANAS; Watson, Clark & Tellegen, 1988; Bruchon-Schweitzer, 2002). Each scale has a ten-word emotion descriptor and respondent rating conveying how well each descriptor reflects their current emotions. Each word was evaluated using a scale of one to five, according to how the word fitted the state of the individual. Medium negative correlations between WEMWBS and PANAS negative affect and high positive correlations with PANAS positive affect were predicted.

The self-report General Health Questionnaire assesses emotional distress for identifying probable mental illness in surveys and evaluations (28-item GHQ, Goldberg & Hillier, 1979;

Goldberg & Williams, 1988; Pariente, Challita, Mesba & Guelfi, 1992). It assesses the client's current states and asks if they differ from his or her usual state over the previous four weeks. It is comprised of four sub-factors evaluating illness: somatic symptoms (items 1 to 7), anxiety/insomnia (items 8 to 14), social dysfunction (items 15 to 21) and severe depression (items 22 to 28). Medium negative correlations between WEMWBS and GHQ were predicted.

PATIENTS assessments

The Positive and Negative Syndrome Scale (30-item PANSS; Kay, Fiszbein, Opler, 1987; Guelfi, 1997) was used first to assess the severity of illness, as perceived by the clinical staff. The PANSS is an interview-based questionnaire, divided into three subscales evaluating positive, negative and general psychopathology sub-scales. Sub-scale scores were associated with a number of clinical, treatment and cognitive variables, including premorbid adjustment, but not outcome per se. This severity of illness scale was predicted to correlate moderately negatively with WEMWBS.

The Clinical Global Impression – Severity Scale (SGI; Guy, 2000) assesses the severity of the patient's illness at the time of assessment by the clinician. It requires the user of the scale to compare the participants with typical patients in the clinician experience. This externally applied scale for severity of illness was predicted to correlate negatively to a minor degree with WEMWBS.

The Birchwood Insight Scale (8-item BIS; Birchwood, Smith, Drury, Healy, Macmillan & Slade, 1994) assesses lack of insight. Three factors of insight are evaluated: awareness of illness, need for treatment and attribution of symptoms. We did not predict any significant correlation with WEMWBS.

The 54-item self-report Social Adjustment Scale (SAS) measures expressive and instrumental performance over the previous two weeks in six role (situational) areas: (1) work, either as a

paid worker, unpaid homemaker, or student, (2) social and leisure activities, (3) relationships with extended family, (4) role as a marital partner, (5) parental role and (6) role within the family unit, including perceptions about economic functioning. Each area covers four expressive and instrumental categories: performance at expected tasks; the amount of friction with people; finer aspects of interpersonal relations; and feelings of satisfaction (Weissman, Prusoff, Thompson, Harding & Myers, 1978; Toupin, Cyr, Lesage & Valiquette, 1993). This scale was predicted to be negatively correlated with WEMWBS to a moderate degree.

The Global Assessment of Functioning assigns a clinical judgment in numerical fashion (0 through 100) to the individual's overall functioning level on Axis V of the DSM-IV [GAF, Diagnostic & Statistical Manual of Mental Disorders, 1994]. This semi-structured interview assesses impairments in psychological, social and occupational/school functioning, but not those related to physical or environmental limitations. This illness impairment scale was predicted to be negatively correlated with WEMWBS to a minor degree.

Statistical analyses

Whenever possible, parameters were expressed as mean and standard deviation (SD). All statistics were performed using the SPSS 23.0 software package.

Inter-sample differences were studied using Student's "t"-test, chi-square, or analyses of variance (ANOVA) for each sample separately. Preliminary item analyses were applied for face and content validities. Distributions were evaluated using the Shapiro-Wilk test. The inter-individual sensitivity was evaluated using the degree to which scores on the scale discriminated between members of the group. Reliability was assessed using both Cronbach's alpha (Cronbach & Meehl, 1955), Cronbach's alpha 95% CIs (Koning & Franses, 2006), as well as the intra-class correlation coefficients (test-retest fidelity). For each sample separately, three analyses were applied for the WEMWBS validation. First, the factorial structure was investigated using exploratory factor analyses with oblique rotation, in accordance with

previous WEMWBS validations (Keyes, 2007; Tennant et al., 2007), and confirmatory factor analyses using weighted least squares estimation. Confirmatory factor analyses (CFA) were undertaken on item responses from the entire population, to test the appropriateness of the structural equation models that specified the pre-hypothesized one-factor structure of WEMWBS using MPLUS (version 7.31) (Muthén and Muthén, 2012). To assess the fit of the observed model to the theoretical one, several adjustment indicators were used. The first was χ^2. It assesses the extent to which the theoretical model represents the observed data. Other indicators were also used to test the fit, as suggested by several authors (Hu and Bentler, 1999). The following measures were used: Comparative Fit Index (CFI), Tucker Lewis Index (TLI), standardized root mean square residual (SRMR) and the Root Mean Squared Error of Approximation (RMSEA). Some authors (Bentler, 1992) recommend a value above 0.90 for the CFI and the TLI. However, a RMSEA and an SRMR below or equal to 0.08 (Browne & Cudeck, 1993) is acceptable according to Hu and Bentler (1999). A RMSEA below or equal to 0.06 should be considered. Second, construct validity was assessed by analyzing correlations between WEMWBS scores and scores for measures of psychological variables using Pearson correlation coefficients (Bourque, Blais & Larose, 2009). Third, temporal stability and sensitivity to change over the course of intervention were evaluated by assessing the significance of change in WEMWBS scores using Student's t-test. For sensitivity to change, Cohen's d was used in estimating sample sizes.

Results

Socio-demography of participants

For WORKERS, mean age was 23.38 (4.12) years. More than 80% were Caucasian, 67% were married or living as couples, and 59% had completed undergraduate educational level.

For STUDENTS, mean age was 19.08 (1.12) years. More than 95% were Caucasian, and none were married or living as couples.

For the entire PATIENTS sample, the mean age was 33.74 (8.95) years, and mean duration of illness was 4.74 (3.24) years. In the sub-sample evaluated after the CRT program, the mean age was 34.55 (7.54) years, and mean duration of illness was 4.75 (3.01) years. All patients were on antipsychotic treatment (risperidone, olanzapine, quetiapine, aripiprazole or clozapine). More than 90% were Caucasian. None were married or living as couples. All were unemployed.

Preliminary analyses

Face validity was assessed by ten non-participants from the general population, the research management committee and relevant scientific experts. Less than 5% of the participants judged the questionnaire of little interest to them. Appendix 1 summarizes the descriptive characteristics for all three samples. Item response frequencies from complete responders in each sample showed a slight left skewed distribution, with all response categories being used by at least one person for all items. WEMWBS scores from the three groups analyzed separately largely complied with assumptions of normal distribution (Figure 1; Table 1).

Cronbach's αs (Cronbach & Meehl, 1955) ranged from 0.85 to 0.89 in the three samples. The Cronbach's α 95% CIs ranged from 0.84 to 0.9 in the three samples. Mean inter-item correlations were from 0.3 to 0.37, consistent with the UK validation of WEMWBS (Table 1). Item total correlations, corrected for overlap, for all items ranged between r = 0.51 and 0.75 (WORKERS), r = 0.52 and 0.80 (STUDENTS), and r = 0.51 and 0.75 (PATIENTS).

There were no differences in WEMWBS score by education level or age (Student's t- tests, p>0.05), nor were there differences in the groups' distribution of gender, ethnicity, or marital status (chi-square, p>0.05). For groups without intervention, no change in WEMWBS score was observed for STUDENTS (n=13) (t=1.58, p=0.14; WEMWBS 53.77 (7.08) and 50.93

(7.22) at baseline and six months respectively; or for WORKERS (n=118) (t=-0.66; p=0.51; WEMWBS 52.19 (6.77) and 52.72 (9.6) at baseline and six months). For PATIENTS, inter-individual sensitivity analysis showed no association between WEMWBS scores and sex, age or mean duration of illness.

Comparing the entire population at baseline, mean WEMWBS scores were lower in PATIENTS (44.86 (9.22)) than in STUDENTS (51.88 (6.87)) or WORKERS (51.47 (7.19)); $F_{(2,554)}=36.45$; $p<0.001$.

Factorial validity

For STUDENTS and WORKERS, combined factor analysis revealed a Kaiser-Mayer-Olkin value of 0.93, indicating that the item-pool was suitable for factorial validation. A scree plot of eigenvalues against component numbers used to illustrate the amount of variance showed that a single factor accounted for 40.12% of variance. The "elbow" of the screen plot highlights a substantial gap between the eigenvalue for the first factor and the second, which was very close to 1, with the subsequent factors being under 1. All items loaded to some extent on the first factor (Tabachnick & Fidell, 2001). Similar results were observed separately for STUDENTS and WORKERS with respective single factor contributions of 35.71% and 50.01% to the observed variance.

Factor analysis from PATIENTS revealed a Kaiser-Mayer-Olkin value of 0.94. Exploratory factor analysis was in accordance with combined general population samples showing a one-factor solution to contribute 39.6% of variance (Figure 1). For PATIENTS, all items loaded to some extent on this factor, and the gap between the eigenvalue for the first factor and the second was large.

Confirmatory factor analyses supported the single factor hypothesis. Analyses indicated that the three factor model fits data correctly ($\chi^2(75)=274.21$, $p<0.001$; RMSEA=0.07, 90% [0.06-0.08]; CFI=0.92 ; TLI=0.90; SRMR=0.04; Figure 2).

Construct validity

In all samples the α-coefficient was above 0.70.

For WORKERS and STUDENTS, correlations were significant, in the expected direction. In WORKERS they were of a slightly greater magnitude than anticipated (Table 2). Correlation with PANAS positive was not as high as expected in either sample, but was higher than correlation with PANAS negative, especially in the STUDENTS sample

For PATIENTS, significant negative associations were observed as expected between WEMWBS and PANSS general scale scores, and marginally significant negative associations between WEMWBS and PANSS total scale scores, insight scores and SAS scores (Table 3).

Sensitivity to change

Among healthy population participants (n=54) who experienced the CCT intervention, WEMWBS score was slightly higher (53.17(7.6)) after CCT than at baseline (51.37(6.72)); p≤0.05). Among PATIENTS (n=20) taking part in the CRT intervention, WEMWBS score was higher (47.6(9.2)) at six months than at baseline (43.75(9.63); p<0.001). The strength of the phenomenon is moderate for the healthy population with d=-0.53 and large for RPS with d=-1.29 for PATIENTS.

Discussion

This study suggests that the French translation of WEMWBS is psychometrically valid in healthy populations. Results were comparable to results of the original version. It can be used for both evaluating trans-cultural normative data and developing methodological cross-cultural comparisons in well-being.

Moreover it suggests, for the first time, that WEMWBS is also valid in psychiatric populations, particularly those for whom mental health promoting interventions could be appropriate – patients with remitted schizophrenia. This is a very important finding because it

means that the patients' and carers' preferred choice of outcome measure (Crawford et al., 2011) can be used to assess the value of interventions, at least among patients in remission.

For healthy populations, results were consistent with, or better than, those from the British validation of WEMWBS (Tennant et al., 2007). The stability of scores over a six month period was good, suggesting that they are not greatly influenced by transient changes in circumstances. On the other hand, scores did change over the course of a mental health promotion intervention. Because there are no objective clinical measures of mental well-being, the concept of clinically or even minimally important difference is not strictly applicable to healthy populations, but the extent of change in this population is compatible with the minimally important difference found in general population samples in the UK (Maheswaran et al., 2012). The strong one-factor solution, supported by the confirmatory factor analyses, confirms a single underlying construct combining affect and functioning (Waterman, 1993; Compton, Smith, Cornish, K. A. & Qualls, 1996; Keyes, Shmotkin & Ryff, 2002). Correlations between WEMWBS scores and scores for measures of psychological variables were mainly as predicted. PANAS positive and negative scores were lower among French students than among their British counterparts (Tennant et al., 2007), and also lower than among the French working population. The PANAS positive scale did not correlate as strongly as predicted in either population. Overall, the results showed that individuals with higher mental well-being were less anxious, more mindful, had more positive emotions (PANAS) than negative, and appeared somewhat less likely to report stressful events. Interestingly, mindful individuals in this sample oriented themselves to ongoing events and experiences in a receptive, attentive manner, and reduced negative appraisals of challenging events (Walach et al., 2006). Although speculative, it is possible that being in a state of mental well-being could alter the stress process by attenuating negative appraisals of stress in demanding situations.

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For patients with remitted schizophrenia, WEMWBS was independent of gender, age and mean duration of illness. Scores were lower than those of the general population. Notably, scores did not correlate with clinician reported degrees of mental illness, suggesting that clinicians may not be assessing outcomes of importance to patients. Alternative explanations for these results may arise from the extent to which individuals with schizophrenia remain oblivious to their true state of mental well-being (Buck, et al., 2012). It is therefore of importance that attending a mental health promoting intervention was associated with a small but significant increase in WEMWBS scores. The extent of change is lower than that estimated to be minimally important in general population samples in the UK, but in the absence of studies specifically addressing this concept in psychiatric populations, statistical significance may be the only valid yardstick. Helping patients with chronic illness return to a state of well-being is recognized to present difficult challenges (Buck et al., 2012), and thus small changes may indicate worthwhile interventions.

Some limitations of this study need to be addressed. First, from a methodological point of view, we did not make a formal estimate of sample before embarking on the study. To that extent the study was pragmatic, recruiting as many participants as possible during a defined study period. The lack of sample size estimate meant that we risked either a type 2 error, failing to detect a genuine difference, or on the other hand, we risked over-sampling and wasting participants' time. Fortunately, the pragmatic approach delivered significant findings with a reasonable sample size. Acceptability of the WEMWBS was not specifically assessed in the population studies. The percentage of responders was not evaluated by the protocol, and the PATIENTS sample was not questioned specifically with regard to acceptability. WEMWBS is known to be highly acceptable to both general population and clinical samples in the UK (Crawford et al., 2011). The high level of item completion in all samples is unlikely to be compatible with a low level of WEMWBS acceptability. Second, assessment of test-

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retest reliability was precluded in the psychiatric population because all patients at the rehabilitation center receive interventions. Finally, we validated WEMWBS in convenience samples, both general population and clinical. Although this is the time-honored practice for instrument validation, the possibility that these results are not generalizable to the general population needs to be considered. The gender mix was not balanced in any of our samples, but the imbalance was in the opposite direction for STUDENTS, where the ratio was in favor of women, from that for WORKERS and PATIENTS where it was in favor of males. In addition, mean ages in all three samples were relatively low. Further studies both in French general populations and in psychiatric populations anywhere in the world would be valuable to corroborate our findings.

Conclusion

WEMWBS performs satisfactorily as a measure of mental well-being in French populations. WEMWBS also performs well among psychiatric populations. Because it provides a single summary score, WEMWBS enables comparisons across different populations and different settings. Because it shows sensitivity to change in relatively small populations, WEMWBS could be useful to professionals working in positive psychology among both healthy and clinical populations. This measure of mental well-being measure may enhance understanding of the cognitive, emotional (Walker, Kestler, Bollini & Hochman, 2004; Ross, Margolis, Reading, Pletnikov & Coyle, 2006) and social consequences of schizophrenia (Zuroff & Colussy, 1986; Hooker & Park, 2002), as well as being useful in developing supportive interventions, for which there is a great need (OECD, 2013). Such trans-culturally valid instruments could be significant for developing shared care strategies for tertiary prevention. Finally, it may provide a tool to enable the reorientation of health services towards the promotion of well-being for people experiencing chronic mental illness.

Authors' contributions

All authors conceived the study and participated in its design. MT, DC, FC, DS and NF carried out the study. MT, FD, GN, SSB and FF planned and participated in the statistical analysis. GN and SSB corrected English language. Each author helped to draft the manuscript. All authors read and approved the final manuscript.

References

Barrios, F., McCraty, R., Cryer, B., 1997. An inner quality approach to reducing stress and improving physical and emotional well-being at WORKERS. Stress Med. 13(3), 193-201.

Bentler, P.M,. 1992. On the fit of models to covariances and methodology to the bulletin. Psychol Bull. 112, 400-404. doi:10.1037/0033-2909.112.3.400

Birchwood, M., Smith, J., Drury, V., Healy, J., Macmillan, F., Slade, M., 1994. A self-report Insight Scale for psychosis: reliability, validity and sensitivity to change. Acta Psychiatr Scand. 9(1), 62-67.

Bourque, J., Blais, J.G., Larose, F., 2009. L'interprétation des tests d'hypothèses : p, la taille de l'effet et la puissance (The interpretation of hypothesis testing : p, the effect size and power). Revue des sciences de l'éducation. 35(1) : 211-226.doi : 10.7202/029931ar

Browne, M. W., Cudeck, R., 1993. Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.). Testing structural equation models (pp. 136–162). Beverley Hills, CA: Sage.

Bruchon-Schweitzer, M., 2002. Psychologie de la santé: modèles, concepts, et méthodes (Health psychology : models, concepts and methods), Dunod, Paris.

Bruchon-Schweitzer, M., Paulhan, I., 1993. Inventaire d'anxiété état-trait forme Y (STAI-Y): Adaptation française (French adaptation of the STAI-Y), Ed. du Centre de psychologie appliquée, Paris.

Buck, K.D., Roe, D., Yanos, P., Buck, B., Fogley, R.L., Grant, M., Lubin, F., Lysaker, P.H., 2012. Challenges to assisting with the recovery of personal identity and wellness for patients with serious mental illness: considerations for mental health professionals. Psychosis. 5(2), 134-143

Castellvi, P., Forero, C.G., Codony, M., Vilagut, G., Brugulat, P., Medina, A., Gabilondon, A., Mompart, A., Colom, J., Tresserras, R., Ferrer, M., Stewart-Brown S., 2014. The Spanish Version of the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) is valid for use in the general population. Qual Life Res. 23(3), 857-868.

Clarke, A., Friede, T., Putz, R., Ashdown, J., Martin, S., Blake, A., Adi, Y., Parkinson, J., Flynn, P., Platt S., Stewart-Brown, S., 2011. Warwick-Edinburgh Mental Well-being Scale (WEMWBS): Mixed methods assessment of validity and reliability in teenage school Students in England and Scotland. BMC Health Qual Life Outcomes. 11, 487. http://www.biomedcentral.com/1471-2458/11/487.

Crawford, M. J., Robotham, D., Thana, L., Patterson, S., Weaver, T., Barber, R., Wykes T. & Rose, D., 2011. Selecting outcome measures in mental health: the views of service users. J Ment Health. 20(4), 336-346.

Compton, W.C., Smith, M.L., Cornish, K.A., Qualls, D.L., 1996. Factor structure of mental health measures. J Pers Soc Psychol. 71, 406-413.

Cronbach, L.J., Meehl, P.E., 1955. Construct validity in psychological tests. Psychol Bull. 52, 281-302.

Cynthia, O., Siu, C.O., Harvey, P.D., Agid, O., Waye, M., Brambilla, C., Choi, W., Remington G., 2015. Insight and subjective measures of quality of life in chronic schizophrenia. Schizophr Res Cogn. 2, 127-132.

Demily, C., Franck, N., 2008. Cognitive remediation: a promising tool for the treatment of schizophrenia. Expert Rev Neurother. 8, 1029-1036.

Demily, C., Franck, N., 2013. Schizophrenie: Diagnostic et prise en charge (Schizophrenia : diagnosis and care), Elsevier-Masson, Paris.

Diagnostic & Statistical Manual of Mental Disorders, 1994. 4th Edition, APA, Washington, DC:.

Goldberg, D.P., Hillier, V. F., 1979. A scale version of the General Health Questionnaire. Psychol Med. 9, 139-145.

Goldberg, D.P., Williams, P., 1988. A user's guide to the General Health Questionnaire, NFER-Nelson, Windsor. UK.

Gremigni, P., Stewart-Brown, S., 2011. Una Misura del Benessere mentale: Validazone Italiana Della Warwick-Edinburgh Mental Well-being Scale (WEMWBS). Giorn Ital Psicol. 2, 543-563.

Guelfi, J.D., 1997. L'échelle PANSS (The PANSS scale). Encéphale. 23(2), 35-38.

Guy, W., 2000. Clinical Global Impressions (CGI) Scale, Modified From: Rush J, et al.: Psychiatric Measures, APA, Washington DC.

Harvey, P.D., Sharma, T, 2002. Understanding and treating cognition in schizophrenia, A clinician's handbook, Martin Dunitz, London.

Hogarty, G.E., Flesher, S., Ulrich, R., Carter, M., Greenwald, D., Pogue-Geile, M., Kechavan, M., Cooley, S., DiBarry, A. L., Garrett, A., Parepally, H., Zoretich, R., 2004. Cognitive enhancement therapy for schizophrenia: effects of a 2-year randomized trial on cognition and behavior. Arch Gen Psychiatry. 61(9), 866-876.

Hooker, C., Park, S., 2002. Emotion processing and its relationship to social functioning in schizophrenic patients. Psychiatry Res. 112, 41-50.

http://www2.warwick.ac.uk/fac/med/research/platform/wemwbs/

Hu, L., Bentler, P.M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Struct Equ Modeling. 6, 1-55.

Kay, S.R., Fiszbein, A., Opler, L.A., 1987. The Positive and Negative Syndrome Scale (PANSS) for schizophrenia. Schizophr Bull. 13(2), 261-276.

Keyes, C.L.M., 2007. Promoting and protecting mental health as flourishing: A complementary strategy for improving national mental health. Am Psychol. 62(2), 95.

Keyes, C.L.M., Wissing, M., Potgieter, J.P., Temane, M., Kruger, A., van Rooy, S., 2008. Evaluation of the Mental Health Continuum Short Form (MHC-SF) in Setswana speaking South Africans. Clin Psychol Psychother. 15, 181-192.

Keyes, C.L.M., Shmotkin, D, Ryff, C.D., 2002. Optimizing well-being: The empirical encounter of two traditions. J Pers Soc Psychol. 82, 1007-1022.

Kohls, N., Sauer, S., Walach, H., 2009. Facets of mindfulness – results of an online Studenty investigating the Freiburg mindfulness inventory. Pers Indiv Differ. 46, 224-230.

Koning, A., Franses, H. P., Confidence intervals for Cronbach's coefficient alpha values. Technical report, Erasmus Research Institute of Management – ERIM, 2006.

Lecrubier, Y., Sheehan, D., Weiller, E., Amorin, P., Bonora, I., Sheehan, K., Janavs, J., Dunbar, G., 1997. The Mini International Neuropsychiatric Interview (M.I.N.I.), a short diagnostic interview: reliability and validity according to the CIDI. Eur Psychiatry. 12, 232-241.

Lloyd, K., Devine, P., 2012. Psychometric properties of the Warwick–Edinburgh Mental Well-being Scale (WEMWBS) in Northern Ireland. J Ment Health. 21(3), 257-263.

McCraty, R., 2001. Science of the heart: exploring the role of the heart in the human performance, Institute of Heartmath, Boulder Creek, CA.

Maheswaran, H., Weich, S., Powell, J., Stewart-Brown, S., 2012.Evaluating the responsiveness of the Warwick Edinburgh Mental Well-Being Scale (WEMWBS): Group and individual level analysis. BMC Health Qual Life Outcomes. 10, 156. http://www.hqlo.com/content/pdf/1477-7525-10-156

McCraty, R., Atkinson, M., Tiller, W.A., Rein, G., Watkins, A.D., 1995. The effects of emotions on short term heart rate variability using power spectrum analysis. Am J Cardiol. 76, 1089-1093.

McCraty, R., Barrios-Choplin, B., Rozman, D., Atkinson, M., Watkins, A.D., 1998. The impact of a new emotional self-management on stress, emotions, heart rate variability, DHEA, and cortisol. Integr Psychol Behav Sci. 33(2), 151-170.

Muthén, L.K., Muthén, B.O., 2012. Mplus User's Guide. Sixth Edition. Los Angeles, CA: Muthén & Muthén

Ng, S.S.W., Lo, A.W.Y., Leung, T.K.S., Chan, F.S.M., Wong, A.T.Y., Lam, RWT, Tsang, D.K.Y., 2014. Translation and Validation of the Chinese Version of the Short Warwick-Edinburgh Mental Well-being Scale for Patients with Mental Illness in Hong Kong. East Asian Arch Psychiatry. 24, 3-9.

OECD, 2013. Guidelines on Measuring Subjective Well-being, OECD publishing, http://dx.doi.org/10.1787/9789264191655-en.

Pariente, P., Challita, H., Mesba, M., & Guelfi, J.D., 1992. The GHQ-28 questionnaire in French: a validation survey in a panel of 158 general psychiatric patients. Eur Psychiatry. 7, 15-20.

Ross, C.A., Margolis, R.L., Reading, S.A., Pletnikov, M., Coyle, J.T., 2006. Neurobiology of schizophrenia. Neuron. 52(1), 139-153.

Ryan, R.M., Deci, E.L., 2001. On happiness and human potential: a review of research on hedonic and eudaimonic well-being. Ann Rev Psychol. 52, 141-166.

Santos, J.J., Costa, T.A. Guilherme, J.H., Silva, W.C., Abentroth, L.R., Krebs, J.A., Sotoriva, P., 2015. Adaptation and cross-cultural validation of the Brazilian version of the Warwick-Edinburgh mental well-being scale. Rev Assoc Med Bras. 61(3), 09-214

Spielberger, C.D., 1975. Anxiety: state-trait–process, In: Spielberger CD, Sarason IG, editors. Stress and anxiety, Wiley, New York.

Spielberger, C.D., 1993. Adaptation française de Bruchon-Schweitzer M, Paulhan I, Inventaire d'Anxiété Trait-État. Forme Y. STAI-Y, Les Éditions du Centre de Psychologie Appliquée, Paris.

Stewart-Brown, S., Tennant, A., Tennant, R., Platt, S., Parkinson, J., Weich, S., 2009. Internal construct validity of the Warwick-Edinburgh Mental Well-being Scale (WEMWBS): a Rasch analysis using data from the Scottish Health Education Population Survey. BMC Health Qual Life Outcomes. 7, 15. http://www.hqlo.com/content/7/1/15

Tabachnick, B.G., Fidell, L.S., 2001. Using multivariate statistics, 4th ed., Allyn and Bacon, Boston.

Taggart, F., Friede, T., Weich, S., Clarke, A., Johnson, M., Stewart-Brown, S., 2013. Cross Cultural Evaluation of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) A mixed methods Studeny. BMC Health Qual Life Outcomes. 11, 27. DOI: 10.1186/1477-7525-11-27. URL: http://www.hqlo.com/content/11/1/27

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., Stewart-Brown, S., 2007. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): development and UK validation. BMC Health Qual Life Outcomes. 5, 63. http://www.hqlo.com/content/5/1/63

Toupin, J., Cyr, M., Lesage, A., Valiquette, C., 1993. Validation d'un questionnaire d'évaluation du fonctionnement social des personnes ayant des troubles mentaux chroniques (Validation of a social functioning questionnaire for chronic disease). Can J Commun Ment Health. 12(1), 43-56.

Trousselard, M., Steiler, D., Raphel, C., Cian, C., Duymedjian, R., Claverie, D., Canini, F., 2010. Validation of a French version of the Freiburg Mindfulness Inventory - short version: relationships between mindfulness and stress in an adult population. BMC BioPsychoSocial Med. 4, 1-11. http://www.bpsmedicine.com/content/4/1/8

Walach, H., Buchheld, N., Buttenmüller, V., Kleinknecht, N., Schmidt, S., 2006. Measuring mindfulness – the Freiburg Mindfulness Inventory (FMI). Pers Indiv Differ. 40, 1543-1555.

Walker, E., Kestler, L., Bollini, A., Hochman, K.M., 2004. Schizophrenia: Etiology and course. Annu Rev Psychol. 55, 401-430.

Waterman, A.S., 1993. Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. J Pers Soc Psychol. 64, 678-691.

Watson, D., Clark, L.A., Tellegen, A., 1988. Development and validation of brief measures of positive and negative affect: the PANAS scales. J Pers Soc Psychol. 54, 1063-1070.

Weissman, M.M., Prusoff, B.A., Thompson, W.D., Harding, P.S., Myers, J.K., 1978. Social adjustment by self-report in a community sample and in psychiatric outpatients. J Nerv Ment Dis. 166, 317-326.

World Health Organisation, 2004. Promoting Mental Health; Concepts emerging evidence and practice. Summary report, Geneva, World Health Organisation.

World Health Organisation, 2001. Strengthening mental health promotion, Geneva, World Health Organisation.

Zuroff, D.C., Colussy, S.A., 1986. Emotional recognition in schizophrenia and depressed inpatients. J Clin Psychol. 42, 411-416.

Table 1: Statistical properties of the F-WEMWBS version for the three samples (WORKERS, STUDENTS and PATIENTS) in comparison to the original data [2,6]. *CI: Confidence Interval.

Populations	Non-patients		PATIENTS
	WORKERS	STUDENTS	
Number (males/females)	319 (256/63)	75 (51/24)	121 (39/82)
Median WEMWBS Score/Range	53/27–70	53/35–70	45/14–65
Mean WEMWBS Score	51.47	51.88	44.86
Standard deviation	7.19	6.87	9.22
Kurtosis	0.6	0.54	0.45
Skewness	-0.48	-0.41	-0.35
Cronbach's α	0.89	0.85	0.88
95% CI* for Cronbach's α	[0.87–0.9]	[0.86–0.9]	[0.84–0.9]
Mean inter-item correlation	0.37	0.3	0.35

Table 2: Mean scores (M), Standard deviations (SD) and Pearson correlation coefficients (r^2) between the French WEMWBS and the applied constructs according to the considered non-patient populations (WORKERS and STUDENTS sub-sample (SS). *p≤0.1; **p<0.001

		WORKERS			STUDENTS
		Full sample (n=306)	SS1 (n=173)	SS2 (n=132)	Full sample (n=75)
Freiburg Mindfulness Inventory	M(SD)	40.45(5.01)	40.05(5.1)	40.85(4.93)	37.79(5.17)
	r^2	0.59**	0.48**	0.69**	0.43**
Trait-anxiety	M(SD)	38.15(9.74)/	38.22(9.65)	38.08(9.85)	42.47(9.29)
	r^2	-0.65**	-0.59**	-0.7**	-0.48**
State-anxiety	M(SD)	35.2(10.51)	35.42(11.03)	35.01(10)	37.22(9.84)
	r^2	-0.66**	-0.64**	-0.67**	-0.53**
PANAS[1] Negative Affect	M(SD)		15.91(5.47)		21.97(6.87)
	r^2		-0.48**		-0.18*
PANAS[1] Positive Affect	M(SD)		35.6(6.3)		36.33(5.17)
	r^2		0.54**		0.51**
General Health Questionnaire	M(SD)			12.4(5.43)	
	r^2			-0.59**	

[1] Positive and Negative Affects Schedule

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Table 3: Mean scores (SD) and Pearson correlation coefficients (r^2) between the French WEMWBS and the applied constructs according to the considered PATIENTS sub-sample (SS).*p<0.1; **p<0.05

		M(SD)	SS1 (n=33)	SS2 (n=78)	SS3 (n=80)	SS4 (n=101)	SS5 (n=55)
			r^2				
PANSS[1]	Total scale	59.09(16.1)	-0.31*				
	General scale	29.48(8.12)	-0.41**				
	Positive Scale	13.03(4.63)	-0.04				
	Negative Scale	16.57(6.75)	-0.21				
GGI[2]		4.48(0.83)		-0.12			
GAF[3]		38.827(11.75)			-0.05		
Insight		8.65(2.12)				-0.18*	
SAS[4]		39.47(11.37)					-0.22*

[1] Positive and Negative Syndrome Scale; [2] Clinical Global Impression; [3] Global Assessment of Functioning; [4] Social Adjustment Scale

Figure legends

Figure 1: Unadjusted distributions of WEMWBS for WORKERS (left), STUDENTS (middle) and PATIENTS (right) samples.

Figure 1

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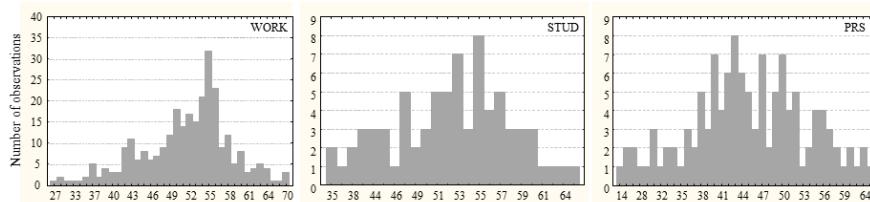
Figure 2: Confirmatory factor analysis for WEMWBS (full scale – 14 items) unidimensional solution applied to the entire group (non-patients and patients) with the fit indices.

Figure 2

$\chi^2(75)=274.21$, p<.001
RMSEA =.07, 90% [0, 06-0.08]
CFI =0.92
TLI=0.90
SRMR=0.04
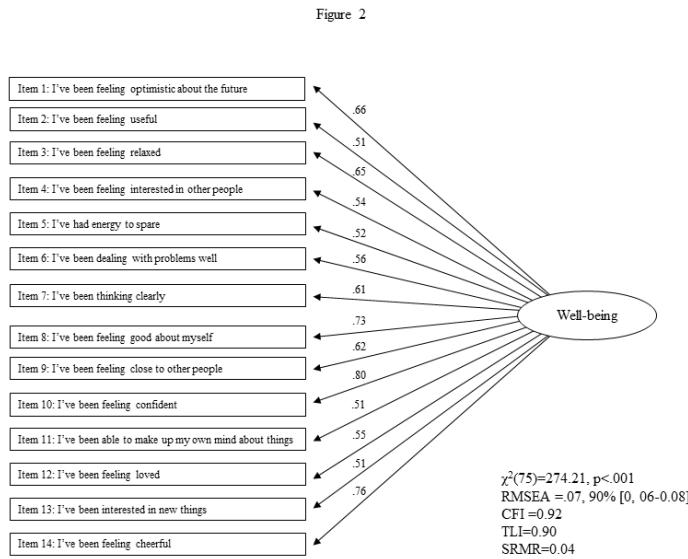
Appendix 1: Descriptive properties of the French WEMWBS items for each sample (workers/Students/patients).

		Mean	SD	Score range	Skewness	Kurtosis
Item 1	Workers/Students	3.61/3.65	0.84/0.83	1-5/1-5	-0.55/0.43	0.16/1.24
	Patients	3.1	1.14	1-5	-0.13	-0.61
Item 2	Workers/Students	3.52/3.32	0.83/0.77	1-5/1-5	-1.15/-0.45	1.69/0.11
	Patients	3.02	1.05	1-5	-0.14	-0.4
Item 3	Workers/Students	3.42/3.24	0.88/0.98	1-5/1-5	-0.48/-0.33	-0.09/-0.11
	Patients	3.05	1.1	1-5	0.05	-0.66
Item 4	Workers/Students	3.68/4.05	0.68/0.73	2-5/2-5	-0.51/-0.72	0.27/0.91
	Patients	3.25	1.03	1-5	-0.52	-0.36
Item 5	Workers/Students	3.83/3.89	0.78/0.89	1-5/1-5	-0.74/-0.83	0.92/0.76
	Patients	3.32	0.99	1-5	-0.42	-0.1
Item 6	Workers/Students	3.65/3.87	0.7/0.74	2-5/2-5	-0.49/-1.01	0.17/1.42
	Patients	3.13	1.02	1-5	-0.42	-0.25
Item7	Workers/Students	3.71/3.56	0.76/0.97	2-5/1-5	-0.35/-0.53	-0.11/-0.1
	Patients	3.21	1.09	1-5	-0.19	-0.49
Item 8	Workers/Students	3.69/3.45	0.78/0.78	1-5/2-5	-0.72/-0.11	0.83/-0.36

	Patients	3.03	1.07	1-5	-0.11	-0.48
Item 9	Workers/Students	3.59/3.81	0.81/0.81	1-5/2-5	-0.59/-0.1	0.32/-0.67
	Patients	3.23	1.03	1-5	-0.34	-0.29
Item 10	Workers/Students	3.58/3.32	0.82/0.96	1-5/1-5	-0.59/-0.13	0.4/-0.73
	Patients	3.01	1.08	1-5	-0.18	-0.44
Item 11	Workers/Students	3.95/3.97	0.73/0.93	2-5/2-5	-0.66/-0.46	0.69/-0.75
	Patients	3.58	0.98	1-5	-0.41	0.03
Item 12	Workers/Students	3.64/3.87	0.83/0.89	1-5/2-5	-0.43/-0.32	0.36/-0.67
	Patients	3.32	0.98	1-5	-0.25	-0.36
Item 13	Workers/Students	3.89/4.17	0.74/0.68	1-5/2-5	-0.65/-0.49	0.9/0.24
	Patients	3.48	1.13	1-5	-0.33	-0.53
Item 14	Workers/Students	3.65/3.69	0.88/0.69	1-5/2-5	-0.58/-0.73	0.43/0.61
	Patients	3.16	1.08	1-5	-0.16	-0.5

Highlights

- This paper reports validation of the French WEMWBS in general and psychiatric populations. WEWMBS was included in the report submitted to Mental Health Research Network (2010) who addressed consensus around the measures of general mental health outcomes and was deemed to be appropriate and relevant for assessing people with psychosis and mood disorder.

- Results showed that WEMWBS proved valid and reliable in a further European population, despite the limits of the study, such as its small, convenience, and non-representative samples. It highlighted the scale trans-cultural validity. It is also valid and reliable in patients with chronic remitted psychiatric disorder, such a schizophrenia. WEMWBS is sensitive to change following wellbeing promoting interventions in both psychiatric and non-patient populations.

- Caution must be paid to bias any attributed to the absence of a priori determination of the required sample sizes of the conclusions, such as acceptability of the instrument or its sensitivity to change. Furthermore, impaired insight and cognition in the assessed patients

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also imply to pay attention must be paid before applying WEMWBS for all patients. Nevertheless, such a validated well-being measure for patients with schizophrenia may enhance the understanding of consequences of this chronic illness in cognition and emotion, and social functioning as well as being useful in specific care interventions for which there is a great need.