

Chapter 2

Psychometric Properties of Three Measures of Protective Factors for Depression and Suicidal Behaviour Among Adolescents

Réal Labelle, MPs, PhD¹; Jean-Jacques Breton, MD, MSc²; Claude Berthiaume, MSc³; Chantal Royer, PhD⁴; Sylvie Raymond, BSc⁵; Marilou Cournoyer, MPs⁶; Bogdan Balan, PhD⁶; Terry Zaloum, MPs⁶; Antoine Bibaud, BSc⁷; Geoffrey Gauvin, LPs⁷; Alain Janelle, PhD⁸

¹ Psychologist and Researcher, Clinique des troubles de l'humeur and Centre de recherche de l'Institut universitaire en santé mentale de Montréal, Hôpital Rivière-des-Prairies, Montréal, Québec; Full Professor, Département de psychologie, Université du Québec à Montréal, Montréal, Québec; Associate Professor, Département de psychiatrie, Université de Montréal, Montréal, Québec.
Correspondence: Département de psychologie, Université du Québec à Montréal, CP 8888, succursale Centre-Ville, Montréal, QC H3C 3P8; labelle.real@uqam.ca.

² Psychiatrist and Researcher, Clinique des troubles de l'humeur and Centre de recherche de l'Institut universitaire en santé mentale de Montréal, Hôpital Rivière-des-Prairies, Montréal, Québec; Associate Professor, Département de psychiatrie, Université de Montréal, Montréal, Québec.

³ Statistician, Centre de recherche de l'Institut universitaire en santé mentale de Montréal, Hôpital Rivière-des-Prairies, Montréal, Québec.

⁴ Full Professor, Département d'études en loisir, culture et tourisme, Université du Québec à Trois-Rivières, Trois-Rivières, Québec.

⁵ Psychiatric Nurse, Clinique des troubles de l'humeur, Hôpital Rivière-des-Prairies, Montréal, Québec.

⁶ Psychologist, Clinique des troubles de l'humeur, Hôpital Rivière-des-Prairies, Montréal, Québec.

⁷ Doctoral Candidate, Département de psychologie, Université du Québec à Montréal, Montréal, Québec.

⁸ Researcher, Clinique des troubles de l'humeur, Hôpital Rivière-des-Prairies, Montréal, Québec.

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Objectives: To assess the reliability of French versions of the Adolescent Coping Scale (ACS), the Reasons for Living Inventory for Adolescents (RFL-A), and the Spirituality Scale (SS); to examine the construct validity of these psychometric instruments; and to determine their convergent validity with French versions of the Life Events Questionnaire for Adolescents (LEQ-A), the Beck Depression Inventory-Second Edition (BDI-II), and the Beck Hopelessness Scale (BHS) among French-Canadian adolescents.

Methods: Participants were 429 adolescents from high schools ($n = 283$) and the Mood Disorder Clinic ($n = 146$) in Montreal. The instruments were translated into French following the back-translation method. The internal consistency was assessed through Cronbach alpha coefficients. Exploratory analyses were conducted to document the content of their dimensions. Convergent validity was examined by correlating the ACS, the RFL-A, and the SS with the French versions of the LEQ-A, the BDI-II, and the BHS.

Results: The findings confirm that the ACS, RFL-A, and SS are psychometric instruments well suited to assess protective factors for depression and suicidal behaviour among French-speaking adolescents in community and clinical settings. However, results must be interpreted with some circumspection as 2 SS subscales obtained reliability coefficients in the moderate range only and the instructions for the RFL-A were reframed in response to ethical considerations.

Conclusions: Our results add to those already available on the original English versions of the ACS, RFL-A, and SS and advance the knowledge of the psychometric properties of protective measures.

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Propriétés psychométriques de trois instruments de mesure des facteurs de protection contre la dépression et les comportements suicidaires chez des adolescents

Objectifs : Évaluer la fiabilité des versions françaises de l'*Adolescent Coping Scale* (ACS), du *Reasons for Living Inventory for Adolescents* (RFL-A), et de la *Spirituality Scale* (SS); examiner la validité de construit de ces instruments, et en déterminer la validité convergente avec les versions françaises du *Life Events Questionnaire for Adolescents* (LEQ-A), du *Beck Depression Inventory-Second Edition* (BDI-II), et du *Beck Hopelessness Scale* (BHS) chez des adolescents canadiens-français.

Méthodes : Les participants étaient 429 adolescents provenant d'écoles secondaires ($n = 283$) et de la Clinique des troubles de l'humeur ($n = 146$) de Montréal. Les instruments ont été traduits en français selon la méthode de traduction inversée. La cohésion interne est estimée par des coefficients alpha de Cronbach. Des analyses exploratoires ont été effectuées pour documenter le contenu des dimensions. La validité convergente a été examinée à l'aide de corrélations de l'ACS, du RFL-A, et de la SS avec les versions françaises du LEQ-A, du BDI-II, et du BHS.

Résultats : Les résultats confirment que l'ACS, le RFL-A et la SS sont des instruments psychométriques appropriés pour évaluer des facteurs de protection contre la dépression et les comportements suicidaires chez des adolescents de langue française, en milieu communautaire et clinique. Ces résultats doivent toutefois être interprétés avec prudence parce que la fiabilité de deux sous-échelles de la SS n'ont obtenu que des coefficients de fiabilité modérés, et que la consigne du RFL-A a dû être reformulée pour des considérations éthiques.

Conclusions : Nos résultats ajoutent à ceux des versions anglaises originales de l'ACS, du RFL-A et de la SS et font progresser l'état des connaissances sur les propriétés psychométriques des mesures des facteurs de protection.

In 2004, the NIMH proposed a major paradigm shift in the psychological assessment of people seen in psychiatric research and in mental care settings by recommending that assessment be complemented by self-report.¹ The idea gained ground recently when it received the endorsement of working groups for the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition.^{2,3} The NIMH recommendation has also made its way recently into the PADS,⁴ a clinical study overseen by the Mood Disorder Clinic in Montreal and aimed, among other things, at assessing the psychometric properties of 3 measures of protective factors for depression and suicidal behaviour among adolescents.

Importance of Acknowledging Protective Factors

The assessment of vulnerability factors in depressed and suicidal adolescents should be balanced by an evaluation of protective factors as the latter plays a crucial role in patient recovery.⁵ Protective factors refer to personal characteristics (for example, the use of productive coping strategies), environmental conditions (for example, benefiting from parental support), situations, and events that prevent or reduce vulnerability to psychopathology or that moderate its aggravation.⁶⁻⁸

Abbreviations

ACS	Adolescent Coping Scale
BDI-II	Beck Depression Inventory—Second Edition
BHS	Beck Hopelessness Scale
LEQ-A	Life Events Questionnaire for Adolescents
NIMH	National Institute of Mental Health
PADS	Protection for Adolescent Depression Study
RFL-A	Reasons for Living Inventory for Adolescents
SLE	stressful life event
SS	Spirituality Scale

Requirements for Clinical Use of Psychometric Instruments

Several requirements must be met before envisioning the use of a psychometric instrument in practice settings. Four criteria regarding the choice of measures to be used in evidence-based assessments of adolescents were retained for the PADS.⁹ First, the measures had to be relevant to the conceptual variables examined (that is, seem consistent with the measured construct). Second, they had to meet basic psychometric standards (for example, for reliability and validity). Third, they had to be useful in relation to the situation (for example, ease of administration in different types of setting). Fourth, the wording within the measures had to be appropriate to the cognitive and emotional developmental stage of adolescents. Three self-report instruments met those criteria: the ACS,¹⁰ RFL-A,¹¹ and SS.¹²

Clinical Implications

- These findings support the use of the ACS, RFL-A, and SS as part of the intake assessment of depressed and suicidal adolescents in health care practice.
- Our results foster a new vision and approach in the assessment of adolescents under clinical care in that they encourage clinicians to consider both protective and risk factors when diagnosing and treating depression and suicidal behaviour.
- These instruments can be easily and rapidly administered and scored by researchers and professionals alike.

Limitations

- Our study is an important first step toward establishing the psychometric properties of 3 measures of protective factors but findings need to be replicated with various subgroups in community and clinical settings.
- The size and composition of our samples, especially for the clinical group, were less than ideal, girls made up nearly two-thirds of the sample.
- Future studies should estimate the test-retest reliability of these instruments.

Three Promising Measures of Protective Factors

Adolescent Coping Scale

The ACS is a self-report questionnaire designed for adolescents aged 12 to 18 years.^{10,13} The ACS serves to assess behaviours that adolescents engage in to cope with SLEs. The instrument comprises 79 items (plus 1 open-ended question) covering 18 coping strategies, which fall under 3 styles of coping: productive coping (focus on solving the problem, work hard and achieve, focus on the positive, self-relaxing diversions, and physical recreation), nonproductive coping (worry, wishful thinking, not coping, tension reduction, ignore the problem, self-blame, keep to self, and seek to belong), and reference to others (seek social support, invest in close friends, social action, seek spiritual support, and seek professional help). Respondents rate how much they use each coping strategy on a 5-point scale: 1 (does not apply or do not do it), 2 (very little), 3 (sometimes), 4 (often), and 5 (a great deal). According to the instrument's manual, the 3 coping styles have sufficient internal consistency to justify their separate subscales (alphas ranging from 0.62 to 0.75).

The ACS was selected for use in the PADS for various reasons. First, it was developed using a theoretical framework based on the transactional model of stress and coping.¹⁴ Second, it allows identifying 18 coping strategies and 3 coping styles that serve to paint the respondent adolescent's coping profile. This profile is of clinical significance in that a nonproductive coping style is predictive of depression and suicidal behaviour in adolescence.¹⁵⁻¹⁸ Third, the ACS is a convenient instrument (it is easy to use, it takes about 10 minutes to administrate, and yields easily interpreted scores). Fourth, it proposes personalized content that appeals to adolescents wishing to gain self-awareness. Fifth, the instrument has become an unavoidable international reference over the years.

However, the ACS has been found to be lacking in terms of supporting empirical evidence.¹⁹ For instance, certain analyses have never been performed on the instrument, including factorial analysis on its items and convergent analyses against related and unrelated scales. In Quebec, a validated French adaptation has been produced,²⁰ but it differs from the original on 2 counts: 2 items have been excluded and 1 strategy added. This is a matter of annoyance because the authors of this Quebec version failed to label the scale as revised, thereby creating confusion in the scientific literature. Finally, the scale has never been used in a psychiatric hospital setting. Our study sought to remedy these gaps.

Reasons for Living Inventory for Adolescents

The RFL-A is a self-report tool measuring beliefs deemed important in the management of mood disorders and the inhibition of suicidal behaviour among adolescents.^{5,21} The inventory comprises 32-items grouped under 5 subscales: family alliance, suicide-related concerns, self-acceptance, peer-acceptance and support, and future optimism. These

correspond to common reasons for living evoked by youth.¹¹ The RFL-A takes about 7 to 10 minutes to complete and can be used with adolescents 13 to 19 years old. Each item is rated on a 6-point scale ranging from 1 (not at all important) to 6 (extremely important). This measure is based on the approach developed by Frankl,²² which focuses on the meaning that people give for surviving emotionally in the face of life-threatening situations. The subscale scores have demonstrated good internal consistency, factor structure, and convergent validity in the adolescent suicide literature.^{5,23,24} The first author had previously translated into French the Reasons for Living Inventory for Adults.²⁵ At the time of writing, no French-language version of any existing instrument had been validated among adolescents with depression and suicidal behaviour.

Spirituality Scale

The third instrument used in the PADS was the SS, a 23-item self-report instrument for assessing beliefs, intuitions, lifestyle choices, practices, and rituals representative of the human spiritual dimension.¹² It requires 5 to 10 minutes to complete. The scale has been tested with 226 adults with a chronic illness. It was found to be internally consistent, with its 3 subscales obtaining Cronbach alpha coefficients of 0.81 to 0.94. Identified through principal components analysis, these correspond to 3 factors: self-discovery and search for meaning in life, relationships with others, and environmental awareness, which includes belief in a higher being or superior intelligence. Previous research has shown spiritual well-being, depressive disorders, and suicidal behaviour to be related among youth.²⁶⁻²⁹ Its definition of spirituality, which is derived from holistic nursing theory,³⁰ affords the SS a conceptual advantage over most instruments in the field. The construct of spirituality proposed by Delaney¹² is broad. It goes beyond religious practices and encompasses 3 key relational aspects: connection with self (personal), with others (interpersonal), and with the divine (transpersonal). This instrument presents another valuable advantage in that it has demonstrated good reliability and validity among adults. However, no adolescent version or French adaptation of this instrument is available.

Objectives of the Study

Against this background, the aim of our research was to: assess the reliability of French versions of the ACS, RFL-A, and SS; examine the construct validity of these psychometric instruments; and determine their convergent validity with French versions of the LEQ-A, BDI-II, and BHS among French-Canadian adolescents.

Methods

Participants and Procedures

Community Group

A convenience sample was drawn from the general population in 8 French-speaking high schools in Montreal. The sample was comprised of 120 girls and 163 boys, of which 167 were 14 to 15 years old and 116 were 16 to 17 years old. These 283 adolescents were born in Canada for the most part (89%)

and 56% lived with both biological parents. Parents' education level was mostly in the low-to-medium range. Nearly 16% of the adolescents had repeated a grade and 25% had a grade average of less than 70%. Data collection took place from November 2006 to May 2007. The questionnaires were completed in small groups outside the classroom under the supervision of 2 research assistants. Consent was obtained from each adolescent and 1 parent. A procedure was devised to provide help to youth at risk for suicidal gestures or attempts and a list of help resources was handed out to each adolescent. Our study was approved by the research ethics board of Rivière-des-Prairies Hospital, a large child psychiatric centre affiliated with the University of Montreal.

Clinical Group

The clinical group consisted of adolescents evaluated at the Rivière-des-Prairies Hospital Mood Disorder Clinic, which offers specialized services to youth 6 to 17 years old with depressive or bipolar disorders and associated suicidal behaviour. The population included 96 girls and 50 boys, of which 68 were 13 to 15 years old and 78 were 16 to 17 years old. Only 10 adolescents were 13 years old in the clinical group. They were assessed from 2005 to 2012. These 146 adolescents were born in Canada for the most part (94%) and 39% lived with both biological parents. Parents' education level was mostly in the low-to-medium range as well. Nearly 37% of the adolescents had repeated a grade and 38% had a grade average of less than 70%. Adolescents were allowed to participate provided the treatment team did not object and only after signed informed consent was obtained from both the adolescent and a parent. Initially, 215 youth met the inclusion criteria. Among these, 168 agreed to participate. However, 22 adolescents were later eliminated for not having completed at least 2 questionnaires or for having given inaccurate answers.

Instruments

For the purpose of testing the convergence validity of the 3 protective factor measures, both groups completed 3 risk factor scales. These questionnaires took 15 to 20 minutes to complete.

Life Events Questionnaire for Adolescents. The first scale was the 39-item LEQ-A, which serves to evaluate recent SLEs of adolescents 14 to 18 years old.^{31,32} The scale is completed in 3 steps. First, respondents must rate how each in a series of events makes them feel on a 5-point scale from 1 (very unhappy) to 5 (very happy). Second, they are asked to indicate whether they experienced the events in the past year. Third, they are asked to indicate whether they experienced these same events more than 1 year earlier. This scale has been translated into French.³³ According to the authors of the translation, the LEQ-A possesses psychometric qualities that warrant its use with adolescents. In our study, we only looked at SLEs in the past year.

Beck Depression Inventory—Second Edition. Participants then completed the BDI-II, a 21-item self-report instrument that serves to assess depression severity in community and

clinical adolescent and adult populations.^{34,35} The instrument covers somatic, emotional, and cognitive symptoms associated with depression. Respondents are asked to rate severity of symptoms in the past 2 weeks on a 4-point scale from 0 (not present) to 3 (severe). The scores are then tallied for a total score that can range from 0 to 63. The following cut-off scores serve as guidelines in interpreting level of severity of depression symptoms: 0 to 13 minimal, 14 to 19 mild, 20 to 28 moderate, and 29 to 63 severe. In this study, question 9 of the BDI-II was used to identify adolescents at high or low risk for suicide. The instrument's internal consistency with adolescent psychiatric populations has ranged from 0.90 to 0.93 and its test-retest reliability has been reported at 0.96.³⁶ The BDI-II has demonstrated good convergent validity ($r = 0.50$ or more) with the BHS³⁷ and the Hamilton Rating Scale for Depression.³⁴ Factor analyses conducted with adolescents have yielded 2-factor models^{38–40} as well as 3-factor models.³⁶ The instrument has been translated into French.⁴¹

Beck Hopelessness Scale. The third instrument used to test convergent validity was the BHS. This self-report inventory is used to assess negative expectations regarding the future in adolescents and adults.^{37,42} It consists of 20 true or false items distributed across 3 factors: feelings about the future, loss of motivation, and future expectations. The BHS total score is the sum of true responses and can range from 0 to 20, with higher scores reflecting higher levels of hopelessness as follows: 0 to 3 normal, 4 to 8 mild, 9 to 14 moderate, and 15 to 20 severe.³⁷ Beck et al⁴² reported internal consistency reliability of 0.93. Psychometric examinations of the BHS have yielded good estimates of internal reliability ($\alpha = 0.97$) and test-retest reliability ($\rho = 0.81$, $P < 0.001$).⁴³ Earlier quantitative validations of the BHS with adolescents and adults revealed a 3-factor structure.^{44,45} However, more recent studies^{46,47} have shown the instrument's variance to be explained best by a 1-factor solution. The inventory has been translated into French for an adult population with depression.⁴⁶

French Translation and Adaptation of the Reasons for Living Inventory for Adolescents and the Spirituality Scale

The consensual methodological approach to translating instruments involves 3 phases: forward translation, back translation, and pre-testing of the translated instrument.^{48,49} Ideally, the cycle is repeated until the target-language version of the instrument is equivalent to the original version despite being adapted to the target culture. These steps were followed in our study to ensure the conceptual equivalence of the RFL-A and the SS in our French versions.

First, the 2 scales were translated from English to French separately by 3 bilingual researchers involved in the study. Then, a consensus meeting was held for the researchers to choose the best wording for each item. This resulted in the blueprints of the 2 scales. However, ethical considerations over the instructions for the RFL-A led the research team to reframe them to guard against fortuitous effects on

Table 1 Mean, standard deviations, and internal consistency of all instruments, by community group ($n = 283$) and clinical group ($n = 146$)

Variable	Community group			Clinical group		
	Mean	SD	α	Mean	SD	α
Adolescent Coping Scale						
Productive coping	3.75	0.52	0.83	2.96	0.62	0.85
Nonproductive coping	2.43	0.53	0.91	2.96	0.59	0.90
Reference to others	2.43	0.56	0.85	2.26	0.56	0.85
Reasons for Living Inventory for Adolescents						
Family alliance	4.90	0.97	0.93	3.96	1.36	0.95
Suicide-related concerns	4.29	1.47	0.92	2.98	1.65	0.96
Self-acceptance	5.09	0.87	0.91	3.39	1.53	0.95
Peer-acceptance and support	4.98	0.84	0.91	3.99	1.31	0.93
Future optimism	5.14	0.75	0.90	3.85	1.38	0.93
Spirituality Scale						
Spiritual beliefs	20.23	9.26	0.88	16.80	10.00	0.91
Self-discovery	24.27	3.53	0.77	18.95	4.83	0.73
Self-awareness and collective consciousness	18.36	4.56	0.67	15.78	5.23	0.68
Respect for others and environment	19.73	3.27	0.67	18.55	3.67	0.64
Life Events Questionnaire for Adolescents ^a	2.27	1.94		4.56	2.55	
Beck Depression Inventory-II	9.87	7.70	0.88	29.37	2.28	0.90
Beck Hopelessness Scale	3.84	3.53	0.82	10.54	5.92	0.92
The total score for each subscale for the 18 Adolescent Coping Scale strategies was calculated on the basis of 5 points to reflect the 5-point Likert scale.						
^a Stressful life events are generally not associated with each other, therefore alphas are not calculated.						

the adolescent respondents. Accordingly, adolescents were asked to give reasons for living, not if they were contemplating suicide, but if a friend was. Second, 2 professional French-English translators (1 from Canada the other from Great Britain) back-translated the instruments separately and the back-translations were compared. Third, we pre-tested the French translations for comprehensibility and cultural validity on 10 youth in the community. Subsequently, the research team modified the wording of a few items that appeared ambiguous, especially in the SS. Permission to translate the questionnaires was obtained from the authors of the original versions.

Statistical Analysis

The final French versions of the protective factors measures were tested for reliability and validity in community and clinical groups separately. We used classical methods to analyze the data.⁵⁰ The internal consistency of each scale and subscale was assessed through Cronbach alpha coefficient.⁵¹ The guidelines suggested in the psychiatric literature⁵² were used to interpret the coefficients: none 0.00 to 0.10, slight 0.11 to 0.39, fair 0.40 to 0.60, moderate 0.61 to 0.80, and strong 0.81 to 1.00. Corrected item-to-total correlations above 0.20 were considered acceptable.⁵³

Construct validity can be useful when it is expected that factor structure might be different from the measurement translated to the original measure. This was a possibility on account of our population's different cultural background

(French, compared with English).⁵⁴ This validity was evaluated through exploratory factor analysis of the items based on Cattell's scree test⁵⁵ and factor loadings over 0.30 obtained from principal axis factoring with varimax orthogonal rotation and oblimin oblique rotation.^{56,57} In the context of an exploratory factor analysis, a scree test serves as a visual heuristic in determining the relative importance of factors.⁵⁸ To determine minimum sample size in factor analysis, 2 different guidelines are normally used: absolute number of cases (100 minimum) and subject-to-variable ratio (5 times the number of variables).^{59,60} Applying these to our study, we arrived at more than 100 cases per group and 90 to 160 participants (18 strategies under ACS and 32 items under RFL-A).

Convergent validity was explored by assessing the relations between scores on the 3 instruments and scores on the LEQ-A, BHD-II, and BHS. This validity was assessed with Pearson correlation coefficient. Values above $r = 0.70$ are recommended, though above 0.50 is acceptable.^{61,62} All analyses were performed with the SPSS 17.0 software.⁶³

Results

Group Scores and Reliability of Instruments

As displayed in Table 1, the group of adolescents under psychiatric care generally self-reported less use of productive coping strategies, gave fewer reasons for living, and indicated being less spirituality oriented, compared

Table 2 Factor loadings and explained sample variance for the Adolescent Coping Scale, by community group (n = 283) and clinical group (n = 146)

Variable	Community group Factor or variance			Clinical group Factor or variance		
	I	II	III	I	II	III
	19.21	12.52	10.86	17.17	14.49	10.81
Productive coping						
Focus on solving the problem		0.65			0.65	
Work hard and achieve		0.45			0.65	
Focus on the positive			0.57		0.58	
Seek relaxing diversions			0.69		0.67	
Physical recreation			0.43		0.5	
Nonproductive coping						
Worry	0.67			0.54		
Seek to belong	0.7			0.63		
Wishful thinking	0.67			0.64		
Not coping	0.72			0.68		
Tension reduction	0.56			0.56		
Ignore the problem	0.56			0.49		
Self-blame	0.66			0.71		
Keep to self	0.58			0.58		
Reference to others						
Seek social support		0.61	0.42			0.72
Invest in close friends			0.62		0.46	
Social action		0.54			0.41	
Seek spiritual support			0			0
Seek professional help		0.66				0.52
In the community group, 42.59% of the variance was accounted for by 3 factors. In the clinical group, 42.19% of the variance was accounted for by 3 factors.						

with the community group. In addition, whereas the community group scored in the minimal range for severity of depression and in the mild range for hopelessness, the clinical group scored in the severe range for depression and in the moderate range for hopelessness. Further, the adolescents in the clinical group reported twice as many SLEs in the past year as did those in the community group. Analyses of internal consistency supported the reliability of the ACS, RFL-A, and SS. The Cronbach alpha coefficients of these instruments ranged from 0.73 to 0.94 for both groups. Though 2 subscales of the SS obtained moderate values ranging from 0.64 to 0.68, these coefficients rose above 0.70 when re-calculated only for adolescents in the community group 16 years old and older. Finally, the reliability coefficients for the BDI-II and the BHS were high. Full results are provided in Table 1.

Construct Validity of Instruments

Exploratory factor analyses were performed on the 3 self-report questionnaires measuring protective factors. For both groups, the scree plot, orthogonal rotation, and oblique rotation suggested a 3-factor solution for the ACS (albeit with some tentativeness for the clinical group), a 5-factor

solution for the RFL-A, and a 4-factor solution for the SS. Given that orthogonal and oblique rotations produce similar factorial solutions, only the simpler orthogonal solution is presented (Tables 2 to 4). Therefore, the results reproduced structure dimensions similar to those reported by Frydenberg and Lewis¹⁰ for the ACS and by Osman et al¹¹ for the RFL-A. However, some differences were observed in the SS subscales between the 2 groups. Indeed, Delaney¹² found only 3 factors instead of the following 4 of our study: spiritual beliefs, self-discovery, self-awareness and collective consciousness, and respect for others and the environment.

Convergent Validity of Instruments

Table 5 gives the correlations between all of the scales and subscales considered in our study. The ACS productive coping subscale and each of the RFL-A subscales correlated negatively and significantly with the BDI-II and BHS composite scores, which suggested that adolescents who engaged in more productive coping and endorsed adaptive reasons for living reported lower levels of depression and hopelessness in both groups. The reverse was also true. The ACS nonproductive coping subscale correlated positively

Table 3 Factor loadings and explained variance for the Reasons for Living Inventory for Adolescents, by community group (n = 283) and clinical group (n = 146)

Variable	Community group Factor or variance					Clinical group Factor or variance				
	I	II	III	IV	V	I	II	III	IV	V
Variable	15.20	13.46	13.37	12.14	10.79	15.86	16.42	15.61	13.37	11.97
Reasons for Living Inventory for Adolescents										
Family cares the way I feel	0.79						0.85			
Family cares what happens	0.76					0.30	0.85			
Enjoy my family	0.73						0.75			
Can turn to family	0.53			0.35		0.30	0.66			
Family takes time to listen	0.78						0.69			
Feel close to family	0.70			0.32			0.76			
Family encourages and supports	0.76						0.83			
Suicide-related concerns										
Thought scares me			0.92					0.84		
Afraid of killing myself			0.96					0.92		
Frightened to make plans			0.89					0.89		
Afraid of using any method			0.91					0.89		
Would not consider			0.65					0.80		
Painful and frightening			0.48					0.69		
Self-acceptance										
I like myself					0.75	0.31				0.76
I am an OK person	0.33	0.37			0.44					0.51
I am happy	0.39	0.34			0.65	0.36				0.78
I feel good					0.77	0.32				0.80
I am satisfied		0.39			0.67	0.45				0.74
I accept myself				0.35	0.53	0.40				0.62
Peer acceptance and support										
Friends accept me				0.61					0.68	
Friends stand by me				0.69					0.79	
I count on my friends				0.70					0.82	
Friends care				0.70					0.78	
I feel accepted				0.70			0.35		0.70	
I believe friends appreciate me		0.35		0.65			0.32		0.70	
Future optimism										
I expect things to happen		0.67					0.70			
I expect to be successful		0.71					0.79			0.38
Hopeful about plans		0.69					0.85			
Plans to carry out		0.74					0.79			
Future looks promising		0.59					0.67			
I like to accomplish my goals		0.70			0.34		0.74			
I have a lot to look forward to as I grow older		0.46					0.61			
In the community group, 64.96% of the variance was accounted for by 5 factors. In the clinical group, 73.23% of the variance was accounted for by 5 factors.										

Table 4 Factor loadings and explained variance for the Spirituality Scale, by community group (n = 283) and clinical group (n = 146)

Variable	Community group Factor or variance				Clinical group Factor or variance			
	I	II	III	IV	I	II	III	IV
	15.97	10.52	9.73	7.52	23.75	11.96	8.36	6.64
Spiritual beliefs								
Prayer is an integral part of my spiritual nature	0.82				0.80			
My faith in a higher power or a universal intelligence helps me cope with challenges in my life	0.79				0.85			
I have a relationship with a higher power or a universal intelligence	0.69		0.33		0.85			
I see the sacredness of everyday life	0.67				0.71			
My spirituality gives me inner strength	0.64		0.51		0.75			
I believe in a higher power or a universal intelligence	0.60				0.74			
I meditate to gain access to my inner spirit	0.49		0.45		0.73			
Self-discovery								
I have a sense of purpose		0.73				0.76		
I find meaning in my life experiences		0.73				0.68		
I am happy about the person I have become		0.65				0.63		
I am able to receive love from others		0.06						0.49
I value maintaining and nurturing my relationships with others		0.43				0.43		0.87
Self-awareness and collective consciousness								
I believe there is a connection between all things that I cannot see but can sense			0.65		0.33	0.38		
Sometimes I feel that I am one with the universe	0.37		0.51		0.58			
I live in harmony with nature			0.48	0.36			0.55	
My life is a process of becoming		0.32	0.45			0.76		
I often take time to assess my life choices as a way of living my spirituality	0.37		0.45		0.60			
I use silence to get in touch with myself			0.37					
Respect for others and environment								
I believe that nature should be respected				0.76			0.75	
The earth is sacred				0.57			0.62	
I believe that all living creatures deserve respect				0.53			0.48	0.32
I respect the diversity of people				0.42				0.50
In the community group, 43.74% of the variance was accounted for by 4 factors. In the clinical group, 50.70% of the variance was accounted for by 4 factors.								

Table 5 Correlations between all instruments, by community group ($n = 283$) and clinical group ($n = 146$)

Variable	Community group		Clinical group	
	BDI-II	BHS	BDI-II	BHS
Adolescent Coping Scale				
Productive coping	-0.39 ^a	-0.52 ^{a,b}	-0.31 ^a	-0.56 ^{a,b}
Nonproductive coping	0.63 ^{a,b}	0.41 ^a	0.62 ^{a,b}	0.52 ^{a,b}
Reference to others	-0.07	-0.28 ^a	-0.08	-0.32 ^a
Reasons for Living Inventory for Adolescents				
Family alliance	-0.38 ^a	-0.41 ^c	-0.21 ^d	-0.39 ^a
Suicide-related concerns	-0.16 ^c	-0.10 ^c	-0.28 ^a	-0.41 ^a
Self-acceptance	-0.39 ^a	-0.48 ^a	-0.37 ^a	-0.60 ^a
Peer acceptance and support	-0.35 ^a	-0.43 ^a	-0.23 ^a	-0.35 ^c
Future optimism	-0.26 ^a	-0.43 ^a	-0.32 ^a	-0.68 ^a
Spirituality Scale				
Spiritual beliefs	-0.04	-0.15 ^d	-0.09	-0.17
Self-discovery	-0.52 ^{a,b}	-0.55 ^{a,b}	-0.45 ^a	-0.64 ^{a,b}
Self-awareness and collective consciousness	-0.06	-0.15	-0.15	-0.41 ^a
Respect for others and environment	-0.03	0	-0.06	-0.17
Life Events Questionnaire for Adolescents				
Beck Depression Inventory-II	0.44 ^a	0.24 ^a	0.18 ^d	0.19 ^d
Beck Hopelessness Scale	0.62 ^{a,b}		0.60 ^{a,b}	

^a $P \leq 0.001$; ^b Clinically significant ($r \geq 0.50$); ^c $P \leq 0.05$; ^d $P \leq 0.01$.

and significantly with the BDI-II and BHS total scores in both groups. In addition, the SS self-discovery subscale correlated negatively and significantly with the BDI-II and BHS scores, which suggested that adolescents who demonstrated little self-awareness reported higher levels of hopelessness in both groups. Moreover, the 3 risk factor instruments were significantly associated with one another. Finally, with the threshold of clinical significance set at $r \geq 0.50$, 3 dimensions correlated with depression, despair, or both: productive coping, nonproductive coping, and self-discovery.

Discussion

Our study aimed to validate French versions of the ACS, RFL-A, and SS. The results lend good empirical support to the psychometric soundness of the French versions of these instruments used with adolescents presenting with depression and suicidal behaviour in community and clinical settings. In terms of reliability, all measures demonstrated strong internal consistency except for 2 subscales of the SS, namely, self-awareness and collective consciousness, and respect for others and environment, which reached only a moderate level of internal consistency. These subscales capture abstract concepts that require a high capacity for abstract thinking and a mature emotional development to be understood. In future, it may be necessary to take into consideration the cognitive and emotional development

levels of respondents to determine whether the scale should be administered to younger adolescents. Also, as the changes to the instructions for the RFL-A did not affect the direction of the results, we recommend keeping these changes in the future.

Factorial analyses conducted to check the content of the dimensions of the French versions of protective factor measures provided evidence that the dimensions documented were consistent with those of the original versions of these instruments. In other words, the scale items formed clear and meaningfully defined components in both groups. However, it should be noted that the factor structures of the ACS and SS were less well-defined in the clinical group. For the SS, the transpersonal dimension could be divided into 2 factors, namely self-awareness and collective consciousness, and respect for others and environment. Finally, as expected, scores on the protective factor measures correlated negatively with the BDI-II and the BHS.

However, these results need to be interpreted with some caution. First, the size and composition of our samples, especially for the clinical group, were less than ideal. Indeed, girls made up nearly two-thirds of the sample (65.6%). Second, though our study focused on reliability of the French versions of the ACS, RFL-A, and SS, it did not document their test-retest stability. Addressing this point

would be an important next step to advance knowledge of these instruments. Third, our study should be replicated using other informants and additional outcome measures. Indeed, self-report instruments yield scores that can easily be exaggerated or minimized by respondents. Fourth, a certain measurement bias might have been introduced by how the scales were administered. In this regard, adolescents in the community group may have been more comfortable divulging information about topics related to depression and suicidal behaviour, compared with those in the clinical group who completed the scales with the help of a researcher.

The ACS, RFL-A, and SS demonstrated acceptable levels of reliability and validity among adolescents with depression and suicidal behaviour in community and clinical settings. The French versions of the LEQ-A, BDI-II, and BHS demonstrated good psychometric properties as well. Results evidence, also, the usefulness of these tools for both research and clinical purposes. These instruments can be easily and rapidly administered and scored by researchers and professionals alike. Based on our findings with adolescents, the association between low levels of protective factors and high levels of risk factors, such as depression and hopelessness, provides a guideline for developing programs to address this distress.

Conclusions

Our study is more comprehensive than previous ones in that it analyzed both protective and risk factors in both community and clinical groups of French-speaking adolescents. Our results add to those already available on the original English versions of the ACS, RFL-A, and SS and advance the state of knowledge of the psychometric properties of protective factor measures. In addition, we confirmed the association between low levels of protective factors and high levels of risk factors among depressed and suicidal adolescents. These findings should encourage clinicians to use both protective and risk measures with depressed and suicidal adolescents. Moreover, they can be useful for researchers in both community and clinical settings.

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