

# Preliminary Reliability Study of the Affective Lability Scale Adapted for Adolescents in a Francophone Clinical Population

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## Abstract

**Objective:** to study the reliability of a self-questionnaire on adolescent affective instability, within a francophone clinical population. **Method:** After reviewing the literature and consulting experts, the Affective Lability Scale (ALS), developed by Harvey and collaborators (1989), was selected. An anglophone and francophone version, adapted for the adolescent population, was developed. The final version includes 54 questions, divided into six sections, which examine the affective variations between euthymia, on the one hand, and depression, elation, and anxiety, on the other, and also examine the affective variations between anxiety and depression, and between depression and elation. The francophone version was the subject of a reliability study. A total of 43 francophone adolescents (48.8% male, 51.2% female; median age=14.86 years) took part in the comprehension and reliability study. **Results:** All questions were assigned a comprehension rate per item (CRI)>0.60 as evaluated by inter-rater agreement (median kappa=0.85). The median CRI is very satisfactory (0.88, SD=0.14). The internal consistency, determined by Cronbach coefficients, is elevated for each section and for the entire instrument (0.87 to 0.95). The temporal stability at three weeks is satisfactory, with an intraclass correlation coefficient (ICC) for the entire scale of 0.89 (confidence interval of 95%=0.75 to 0.95) and section's ICCs ranging between 0.72 and 0.89. **Conclusion:** This initial reliability data supports interest in the ALS as a means to evaluate a global level of affective lability, during the euthymic phase, among francophone adolescents in an in-patient psychiatric unit. A future study with a larger sample will make it possible to confirm these initial results and examine the factorial structure of the instrument.

**Key words:** mood instability, adolescence, scale, reliability study

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Affective instability lies at the heart of pathologies with increased risk for suicide, such as bipolar disorder (BD) and borderline personality disorder (BPD) (George, Miklowitz, Richards, Simoneau, & Taylor, 2003). In BPD adults, affective instability is the greatest predictive factor for risk of suicide (Yen et al., 2004) and the component for which temporal stability is most elevated (McGlashan et al., 2005). In adults during the euthymic phase, BPD is associated with greater affective lability than BD (Henry et al., 2001). The study by Henry and collaborators (Henry et al., 2001) clarified the differences between BPD and BD: one notes 1) greater frequency in affective variation between euthymia and anger in BPD; 2) and in BD, greater frequency in affective variation between euthymia and euphoria, and between depression and euphoria. Among adults, Koenigsberg and collaborators (Koenigsberg et al., 2002) compared BPD to other personality disorders. In BPD, they noted a greater frequency of affective variations between euthymia and anxiety, euthymia and anger, and anxiety and depression.

Among adolescents, affective instability, and associated pathologies are frequent causes for hospitalization (Chabra, Chavez, Harris, & Shah, 1999). They remain difficult to determine (Guilé, 2004). Therefore, at any age, a dimensional diagnostic approach (Goodman et al., 2003; Guilé, 2004; Paris, 2004) focussing on instability appears to be particularly relevant.

However, to the best of our knowledge, no validated

self-questionnaire is available to evaluate affective instability in francophone adolescents. A literature search, from 1996 onwards, was conducted at the start of the study, using Medline and PsychInfo; the search for *mood or affective and instability or lability*, cross-referenced with *measurement or scale*, yielded 91 studies. None dealt with the adolescent clinical psychiatric population. Moreover, the studies conducted with adults most frequently used the Affective Lability Scale (ALS), developed by Harvey and collaborators (Harvey, Greenberg, & Serper, 1989). It is a self-questionnaire examining the variation between the euthymic state and four affective states: depression, elation, anger and anxiety, as well as the variation between elation and depression, and between anxiety and depression. The anglophone version of the ALS has been the subject of several reliability studies, involving a total of 577 young adults between 18 and 21 years of age (Harvey et al., 1989); in those studies, the anglophone version had not been adapted specifically for adolescent use.

The goal of this study is to conduct a preliminary reliability study on the adapted version of the ALS for francophone adolescents.

## Method

### Sample

The sample includes male and female adolescents, 13 to 17 years of age, who have been hospitalized in an

adolescent university psychiatric facility during the 2 years preceding the study, or hospitalized during the three-month recruitment period. It was decided to conduct the study with hospitalized subjects because that population exhibits a greater frequency of severe pathologies, including mood instability, and affective and personality disorders, compared with those attending out-patient clinics. The study was proposed by the treating psychiatrist to hospitalized teenagers with no mental retardation, at the waning of their acute phase and after clinical confirmation of their euthymic state. Inclusion was conditional on there being no objection from the treating team and was carried out after the adolescents and their parents signed informed consent forms. Of the 147 hospitalized patients, 61 met the inclusion criteria according to the treating team, and 43 agreed to participate. The sample was comprised of 48.8% male adolescents and 51.2% female adolescents; the median age was 14.86 (SD=1.27) with a variable length of hospital stay (mean=23.2 days; SD=22).

#### *Instrument*

After conducting a literature review (1996–2005) on measuring affective instability in adolescents and after consulting experts (Drs John Gunderson and Larry Siever), the Affective Lability Scale (ALS) (Harvey et al., 1989), was determined to be an appropriate instrument for the adolescent population. The ALS includes 54 questions, rated from 0 to 3, and is divided into six sections that examine affective variations between euthymia on the one hand, and depression, elation, anger and anxiety, on the other, and that also examine the affective variations between anxiety and depression, and between depression and elation. The total score is the sum of the question's scores divided by 54. When used with adults, the ALS demonstrates a high level of internal consistency (section's alpha coefficient between 0.73 and 0.89 and intersection correlations between 0.64 and 0.81) as well as acceptable test-retest reliability (section correlation between 0.48 and 0.86). The original English version and the rating algorithm were obtained from Philip Harvey, PhD. The adaptation for the francophone adolescent population was carried out in stages: 1) In liaison with P. Harvey, the research team met to reach consensus on the face validity of each item; 2) Each item was revised by two researchers (CC, JMG) to simplify the questions (e.g. question 7, adult version: "*I switch back and forth between being more talkative than usual and having only a normal amount of interest in talking*" became, in the adolescent version, "*Sometimes I speak more than usual and other times I speak as usual*"). The resulting anglophone adolescent version was verified and accepted by P. Harvey (Appendix 1); 3) the 54 items in the anglophone version were translated by two researchers (CC, JMG) (e.g. question 7: "*Parfois je parle beaucoup plus que d'habitude et d'autres fois je parle comme d'habitude*");

4) the wording of problematic items was explored by consulting adolescents in the general population and finalised during a consensus meeting by the research team; 5) then a preliminary francophone version was created, including 70 items, of which 16 were alternative questions. At the end of the comprehension study, the definitive version of 54 items was established.

#### *Procedure*

The current study was authorized by the research ethics committee at the hospital where the participants were recruited. It was comprised of two successive components, namely: comprehension and reliability. *Component 1: Comprehension Study.* The first 10 consecutive participants were included in the study on the 70-item preliminary version. To ensure each interview lasted less than one hour, the adolescents were randomly divided, with each one being required to answer half of the group of items. All participants were asked to rephrase each question in their own words and provide an example. The transcript of the interview was evaluated independently by two raters (LD, JMG) who were to indicate if the question was or was not understood. A comprehension rate per item (CRI) and an inter-rater agreement were calculated. In keeping with the 0.60 threshold used in other studies in adolescents (Smolla, Valla, Bergeron, Berthiaume, & St-Georges, 2004), the items with a CRI <0.60 were rejected or rephrased. When it was necessary to choose between items with equivalent CRI ratings, the item with the superior kappa was retained. A complementary comprehension study on four rephrased items was conducted with nine participants, and the same judging procedure was applied. *Component 2: Reliability Study (internal consistency and reliability test-retest).* The study was conducted with 24 participants, included on average 6.6 months (SD=5.7) after discharge from hospital and after verifying their euthymic state with their treating physician. From that group, 22 took the retest after 13 to 36 days (median=22.64, SD=6.98).

#### *Statistical Analysis*

Inter-rater agreements of the comprehension study were evaluated, using the kappa test, in keeping with Fleiss criteria (Fleiss, 1981) ( $0.40 < k < 0.60$  = satisfactory reliability). The correlations and Cronbach coefficient, and the intraclass correlations have been calculated using SPSS software to evaluate internal consistency and test-retest reliability, respectively.

#### **Results**

##### *Comprehension*

The inter-rater agreements and the comprehension rates per item (CRI) are presented in Table 1. The inter-rater agreement was satisfactory (median kappa=0.85). All questions in the final version have a CRI >0.60 from

**Table 1. Comprehension Rate per Item (CRI) and Inter-rater Agreements**

**ALS Comprehension Studies (n=19)**

Question retenue	CRI (Rater 1)	CRI (Rater 2)	Kappa	Significance
1	1.00	1.00	1.00	0.03
2	0.89	0.67	0.40	0.14
3	0.78	0.89	0.61	0.05
4	0.80	0.80	1.00	0.03
5	1.00	1.00	1.00	0.03
6	1.00	1.00	1.00	0.03
7	0.80	0.80	1.00	0.03
8	0.60	0.80	0.55	0.17
9	0.80	0.80	1.00	0.03
10	1.00	1.00	1.00	0.03
11	1.00	0.67	0.31	0.34
12	1.00	0.60	0.60	PO*
13	1.00	1.00	1.00	0.03
14	1.00	1.00	1.00	0.03
15	1.00	1.00	1.00	0.03
16	0.78	0.89	0.61	0.05
17	0.80	0.80	1.00	0.03
18	1.00	1.00	1.00	0.03
19	1.00	0.80	0.80	PO
20	1.00	1.00	1.00	0.03
21	0.80	1.00	0.80	PO
22	1.00	0.80	0.80	PO
23	0.80	0.80	1.00	0.03
24	0.67	0.60	1.00	0.03
25	1.00	0.60	0.55	0.17
26	1.00	1.00	1.00	0.03
27	1.00	0.80	0.80	PO
28	1.00	0.80	0.80	PO
29	1.00	1.00	1.00	0.03
30	0.80	1.00	0.80	PO
31	1.00	1.00	1.00	0.03
32	0.80	0.80	1.00	0.03
33	1.00	1.00	1.00	0.03
34	0.60	0.60	1.00	0.03
35	0.80	0.60	0.55	0.17
36	0.80	0.80	1.00	0.03
37	0.80	0.80	1.00	0.03
38	1.00	0.80	0.80	PO
39	1.00	1.00	1.00	0.03
40	0.80	0.60	0.55	0.17
41	1.00	1.00	1.00	0.03
42	1.00	1.00	1.00	0.03
43	1.00	1.00	1.00	0.03
44	0.80	0.80	1.00	0.03
45	0.80	1.00	0.60	PO
46	0.60	1.00	0.60	PO
47	0.80	0.60	0.73	0.03
48	1.00	1.00	1.00	0.03
49	0.60	0.80	0.55	0.17
50	0.80	0.60	0.55	0.17
51	1.00	0.80	0.80	PO
52	0.60	0.60	1.00	0.03
53	0.80	0.60	0.55	0.17
54	1.00	1.00	1.00	0.03

\* PO: pourcentage observé (utilisé quand il n'est pas possible de calculer le coefficient de kappa)

the two raters. The median CRI for the 54 selected questions is high (0.88, SD=0.14). No significant difference is found between male and female adolescents, and the median CRI is, respectively, 0.87 and 0.86 (t=0.23, NS).

*Internal Consistency*

The correlation matrix (Table 2) indicates highly significant correlations between most of the sections, except for the elation section, and to a lesser degree, the anger section, for which the correlations are moderate. The internal consistency, assessed by Cronbach alpha coefficients, is higher for each section. The coherence between sections is also higher ( $\alpha=0.95$ ) at t1 (n=24) and at t2 (n=22) ( $\alpha= 0.97$ ).

*Test-retest Reliability*

The temporal stability is satisfactory with an intraclass correlation coefficient (ICC) of 0.89 for the entire scale, with a confidence interval (CI) of 95% from 0.75 to 0.95. The ICC ranges between 0.72 and 0.89 with the greatest CI spread in the anxiety, depression and elation sections (Table 3).

**Discussion**

To our knowledge, it is the first reliability study to use a self-questionnaire to specifically target affective variability in adolescents. It is based on the Affective Lability Scale (Harvey et al., 1989) which has been adapted for adolescents, using simplified statements. Compared with the anglophone adult version, the adolescent version demonstrates similar psychometric characteristics. Its correlation matrix is similar to that of the adult scale. In the adult scale, the weakest correlations are observed between the anger section and the 5 other sections (0.60 to 0.66), and between elation, and anxiety and anxiety/depression (0.67 and 0.64). In the adolescent scale, the elation section demonstrates weaker correlations when compared to most of the sections, except for depression and bipolarity. However, as in our adolescent version, the strongest correlations in the adult version are between bipolarity, on one hand, and depression (0.81) and elation (0.80) on the other.

Likewise, in the test-retest study, temporal stability is similar to that of the adult scale, with the lower sections being anxiety, depression and elation, and the higher sections being anger, anxiety/depression fluctuation, and bipolarity.

The primary limitation of the study is the sample size, which does not allow for verification of the factorial structure of the instrument. However, the strong correlation observed between the sections leads one to believe that the structure is essentially single-factored and that the scale targets a primary factor in affective lability. With regard to generalizing the findings in this study, it must be noted that this study took place during a euthymic period in a sample group from an in-patient unit.

**Table 2. Correlation Matrix and Internal Consistency at t1 (n=24)**

Section (Number of Items)	Alpha	Anger	Anxiety	Depression	Elation	Anxiety/Depression	Bipolarity
Anger (7)	0.87						
Anxiety (7)	0.87	0.66***					
Depression (11)	0.88	0.71***	0.61**				
Elation (12)	0.87	0.44*	0.51*	0.71***			
Anxiety/Depression (8)	0.91	0.63**	0.75***	0.77***	0.52**		
Bipolarity (9)	0.91	0.75***	0.59**	0.83***	0.78***	0.68***	
Total Score	0.95	0.84***	0.81***	0.90***	0.75***	0.86***	0.91***

\*  $p < 0,05$ ; \*\*  $p < 0,01$ ; \*\*\*  $p < 0,001$

**Table 3. Test-retest Reliability (n=22)**

Section	ICC	CI 95%
Anger	0.89	0.77 0.95
Anxiety	0.74	0.47 0.88
Depression	0.73	0.45 0.87
Elation	0.72	0.45 0.87
Anxiety/Depression	0.85	0.68 0.94
Bipolarity	0.85	0.67 0.93
Total Score	0.89	0.75 0.95

ICC intraclass correlation, CI confidence interval

### Conclusion

Based on the encouraging results of the reliability study, this adapted version of the ALS appears to be an instrument that could aid in evaluating the global level of affective lability in francophone adolescents in in-patient psychiatric units. The section ratings will have to be used prudently until a factorial validity study is conducted to validate the structure of the instrument, using an appropriate sample.

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**Affective Lability Scale (ALS, Harvey, 1989)**  
**Adapted version for adolescents**

1. I sleep well for several nights, and afterwards I am so depressed that I do not sleep well at all.	
2. There are times when I really feel very restless, and shortly thereafter, I don't feel restless at all.	
3. There are times when I am so nervous that I feel lightheaded and/or dizzy, and soon afterwards, I feel so sad that I have difficulty getting motivated to do anything.	
4. My level of worry shifts often: sometimes I worry a lot more than usual, and at other times, I don't worry more than usual.	
5. At certain moments, I am calm and, a minute later, I become so nervous that I lose my train of thought and get dizzy.	
6. At times, I get excessively involved in activities, and afterwards I lose interest in participating and I regret getting myself involved.	
7. Sometimes I speak more than usual, and other times I speak as usual.	
8. There are times when I have little energy, but then, soon afterwards, I have about the same energy level as usual.	
9. I find that my enjoyment in activities frequently changes, from times when I enjoy my activities, to other times when I couldn't care less about them.	
10. There are times when all I can think about is how worthless I am, and then, very soon afterwards, all I can think about are the things that I am worried about.	
11. My sleeping habits frequently shift, from times when I can sleep all day long to times when I do not have much of a need to sleep at all.	
12. One minute, I can be feeling ok, and the next minute, I am tense, jittery and nervous.	
13. Sometimes I feel guilty about things, and then they suddenly stop bothering me.	
14. Often I am in a good mood and, all of a sudden, I can't control myself and get angry.	
15. It's very common for me to be extremely angry about something and then to suddenly feel like my normal self.	
16. Many times I feel very nervous and tense, and then, suddenly, I feel very sad and down.	
17. Sometimes I go from feeling extremely anxious about something to feeling very down about it.	
18. My mood shifts rapidly, from times when I feel about average to times when I can laugh and joke all day long.	
19. There are times when I feel moderately optimistic about the future, and then, shortly afterwards, I feel pessimistic about the future and what it will bring.	
20. I shift back and forth, from feeling perfectly calm to feeling uptight and nervous.	
21. There are times when I am perfectly calm, and, the next minute, I am furious and get mad about the least little thing.	
22. I shift back and forth, between feeling depressed and down in the dumps to feeling on edge and irritable.	
23. Frequently, I will be feeling ok, but then suddenly I get so mad that I want to hit something.	
24. I switch back and forth, between having a great deal of interest in sexual activity and having no interest in sexual activity at all.	
25. Sometimes I can concentrate well and then, the next minute, my sadness prevents me from concentrating.	
26. I switch back and forth, between able to sleep well and being so nervous that I can hardly sleep at all.	
27. At certain times, I want to see a lot of people, and, at other times, I feel like it more or less.	
28. There are times when I feel on edge and irritable and other times shortly afterwards when I feel comfortable and relaxed.	
29. Sometimes I feel depressed one minute, and I shift to feeling elated the next minute.	
30. There are times when I feel extremely worthless, and then, suddenly, I will think I am extraordinary.	
31. Sometimes I find myself feeling perfectly ok one minute, and then, the next minute, I will be crying.	
32. My level of optimism shifts frequently, from times when I am extremely optimistic to times when I have a normal level of optimism.	
33. There are times when I am mad and scream at everyone, and shortly thereafter I don't think of it at all.	

34. I switch back and forth, between being extremely energetic to having so little energy that it's a huge effort just to get to where I am going.	
35. My mood frequently shifts from feeling ok to feeling extremely happy and on top of the world.	
36. There are times when I feel absolutely wonderful about myself, but soon afterwards, I feel perfectly normal.	
37. I shift back and forth, between worrying about many things to having very little interest in anything.	
38. Sometimes I feel so sad that all I want to do is sleep, but then, soon afterwards, I might feel so nervous that I can hardly sleep at all.	
39. My productivity level frequently shifts, from times when I am extremely productive to times when I am no more productive than usual.	
40. My appetite frequently changes, from times when it's either increased or decreased to times when it's perfectly normal.	
41. At times I am very mad, but soon afterwards I feel calm.	
42. I shift back and forth, between being very unproductive and being just as productive as usual.	
43. Sometimes I feel extremely energetic one minute and then, the next minute, I might have so little energy that I can barely do anything.	
44. At times I feel calm, and soon after, I feel like my heart is beating fast and I have trouble breathing.	
45. There are times when I have more energy than usual, and, soon afterwards, my energy level is normal.	
46. At times, I feel that I am doing everything at a very slow pace, but soon afterwards, I do things as usual.	
47. I switch back and forth, from being very creative and thinking unusually clearly to moments when I am no more creative than usual.	
48. My sleeping patterns frequently shift, from times when I have difficulty falling asleep to times when I don't have much of a desire to sleep at all.	
49. At times, I have difficulty thinking or concentrating, but soon afterwards, I think a lot about all the things that I am worried about.	
50. here have been many times when I have been so mad that I snapped at people all day long, but then, soon afterwards, I had a lot of tolerance for others.	
51. There are times when I love being with lots of people, but soon afterwards, I prefer to be alone.	
52. My level of interest in sex seems to change frequently and quickly. I'll have a great deal of interest in sex one minute and the next minute my level of sexual interest is normal.	
53. I switch back and forth, between hardly needing much sleep at all to requiring about the same amount of sleep as most people.	
54. Sometimes I like being with others, and at other times, I prefer being alone.	

**Affective Lability Scale (ALS, Harvey et al, 1989)**  
**Version Adapted for Francophone Adolescents (Guilé et al, 2009)**

**Rating the results:**

**Each question** is rated by the respondent according to the following scale: rarely true=0; sometimes true=1; often true=2; very often true=3.

To calculate the **section ratings** add the scores for each question, and then divide them by the number of questions per section:

Depression (variation between normal mood and depression)  
Sum (1, 8, 9, 13, 19, 25, 31, 40, 42, 46, 54)/11=

Elation (variation between normal mood and elation)  
Sum (2, 6, 7, 18, 27, 32, 35, 36, 45, 47, 52, 53)/12=

Anxiety (variation between normal mood and anxiety)  
Sum (4, 5, 12, 20, 26, 28, 44)/7=

Anger (variation between normal mood and anger)  
Sum (14, 15, 21, 23, 33, 41, 50)/7=

Bipolarity (variation between anxiety and depression)  
Sum (3, 10, 16, 17, 22, 37, 38, 49)/8=

Depression/Elation (variation between depression and elation)  
Sum (11, 24, 29, 30, 34, 39, 43, 48, 51)/9=

For the **global score of mood variation**: add all the question ratings and divide by 54.