

INTERACTIONS BETWEEN MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL WITH DEPRESSIVE FEELINGS DURING ADOLESCENCE

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OBJECTIVES: THE PRESENT RESEARCH AIMS AT EXAMINING DEPRESSIVE EXPERIENCES DURING ADOLESCENCE IN A SAMPLE OF YOUNG SECONDARY SCHOOL STUDENTS (12-18) AS A FUNCTION OF THEIR FAMILY TIES (OLSON'S FACES III) AND OF THEIR MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL. **METHOD:** THREE HUNDRED AND TWENTY-FIVE "NORMAL" YOUNG SUBJECTS COMPLETED ZUNG'S DEPRESSION QUESTIONNAIRE, WALLSTON MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL FORM, AND A OLSON'S FAMILY DESCRIPTION QUESTIONNAIRE. **RESULTS:** A POSITIVE CORRELATION WAS FOUND BETWEEN EXPERIENCING DEPRESSION AND AGE, AS WELL AS BETWEEN EXPERIENCING DEPRESSION AND THE BELIEF THAT HEALTH IS DEPENDENT ON CHANCE FACTORS OR ON FATE. ON THE OTHER HAND, A NEGATIVE CORRELATION WAS FOUND BETWEEN THE LEVEL OF FAMILY COHESIVENESS AND EXPERIENCING DEPRESSION. **CONCLUSION:** THE PARALLEL INCREASE OF DEPRESSIVE EXPERIENCES WITH AGE AMONG ADOLESCENTS QUESTIONS THE DISTINCTION BETWEEN "NON-PATHOLOGICAL" EXPERIENCES AND MAJOR DEPRESSIVE DISORDER. NOTWITHSTANDING THE ABOVE OVERLAP BETWEEN PATHOLOGY AND NORMAL DEPRESSIVE EXPERIENCES DURING ADOLESCENCE, THE DSM IV CRITERIA OF DEPRESSION SHOULD BE STRICTLY MET. MOREOVER, AS FOR OTHER PSYCHOLOGICAL DISORDERS, FAMILY COHESIVENESS SEEMS TO HAVE A PROTECTIVE EFFECT AGAINST DEPRESSION.

Key words : Adolescence, FACES III, MHLC, depression

INTRODUCTION

Although the concept of adolescent depression is quite recent (as the clinical literature for the last 30 years or so attests), it has lately sparked quite a large number of publications. In 1999, Dumas published a chronological review of the different approaches to depression during adolescence. Dumas (as Parry-Jones, 1995) divided them in four perspectives in terms of how they relate depressive experiences during adolescence to the formal diagnosis of depression. In the first one, depression in the full sense of the word is impossible during adolescence because the psychic system has not yet achieved full maturation. A second approach grounds its assertions on the observation that in spite of the fact that many adolescents show symptoms of depression, a full blown depression is rarely observed among them. According to this view, depression is a normal experience due to the many necessary adaptation efforts adolescents must face (Petersen & al., 1991). Based on the same observation, a third approach suggests that adolescent depression differs from adult depression and either manifests itself under the cover of another psychopathology (hyperactivity, delinquency, anxiety ...) (Cytryn & McKnew, 1974) or corresponds to diagnostic criteria that must be specific to this cohort (Weinberg & al., 1973). The fourth perspective, which has also been the preferred one over the last five years suggests that depression, as a full diagnostic entity, is an ontological reality in adolescence and is more common than previously thought. Basing its above assertion on epidemiological data, this perspective brought research efforts towards

either exploring the effectiveness of antidepressant drugs (e.g. Keller et al., 2001), identifying co-factors of depression during adolescence (particularly family co-factors) (e.g., Brent et al., 1999), or theorising about adult developmental psychology (e.g. Weissman, 1996).

Over the past few years, our research have led us to adopt an approach that combines the second and fourth perspectives mentioned above (Zdanowicz et al., 1996; Dedercq et al 1996). Indeed, it seems that complaints of a depressive nature are frequent during adolescence, and that the clinical description of many adolescent cases matches the criteria for depressive disorder as defined in the DSM-IV (1994). Based on these we have attempted to explore in more depth this age-tied correlation. We also attempted to investigate possible correlations between adolescents' health, family parameters, and depressive experiences among adolescents. In that purpose, we used 3 tools: 1/ Zung depression scale, 2/ the MHLC and 3/ the FACES III.

RESEARCH QUESTIONS AND MEASUREMENTS

1/ In order to systematise the depressive experience and hence to overcome the problem of registering the complaints, we have used Zung's (1965, 1972) self-rating scale of depression. The reason why we have opted for this scale is because in addition to its being relatively quickly answered (15 min), it is an indicator of the intensity of depressive experiences rather than a diagnostic test. Nevertheless it is currently admitted that a score equivalent to or higher than 0.7 is indicative of a

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suspected (0.96) major depression (Benaiges, 2001). This scale was used in more than 700 studies.

2/ We have also asked our subjects to fill Wallston's (1978) multidimensional health locus of control (MHLC). This scale explores its respondent's beliefs as to her/his responsibility in determining her/his health status. It is multidimensional in that it allows the identification of three different types of beliefs: two of whose are "external" and one, "internal" in nature. Individuals characterised by an internal locus of control consider that the reinforcements they enjoy depend largely on their own behaviours. This dimension is identified as the subscale of "internality" of health locus of control (INTERNALITY HLC). Externally controlled individuals consider that their health is either the result of chance or fate. This dimension is measured by the "chance" health locus of control subscale (CHLC) assessing others' action, and identified as "others' power" health locus of control (PHLC). Finally, a measurement of the ratio between internal and external tendencies can be calculated with Reynaert's I/E ratio (1995).

Since the creation of this scale, many studies (Pauwels et al., 1999) have been developed and show that through preventive primary and secondary attitudes, the MHLC was a good predictor of health both in medicine and in psychiatry. Moreover, W.R. Stanton (1995) had demonstrated the usefulness and stability of the MHLC in adolescence. However, it should be kept in mind that, as for all scales, the MHLC has its limitations, and seems particularly less relevant in tackling respondents' will to control their own health and the value they attribute to health issues (Corner & Norman, 1999). Consequently, Wallston (1992) considers that today, the MHLC is rather a global indicator of attitudes towards one's health (unspecific in terms of attitudes towards a given disease), and that it is relative (i.e. between the willingness to take the necessary actions to control one's health, and acting, there is a gap that many other variables must account for).

With the help of this scale, we could establish the existence of a correlation between family cohesiveness and the power that is attributed to others over one's own health (PHLC) on one hand, and between adaptability and beliefs in personal responsibility for one's own health (Internality HLC) on the other (Zdanowicz & al., 2002).

3/ Olson's circumplex model (Olson, 1986) aims at assessing two dimensions (axes) of an operating relational system: cohesiveness and adaptability. *Cohesiveness* is defined as "the emotional links that each member of a family develops with the other members". *Adaptability* refers to the "capability of the marital or familial system to change its structure of power, role distribution, and behavioural rules in reaction to given situations or to a stressing development." FACES III (Family Adaptability and Cohesion Evaluation Scale) which is a version of the self-rating test, allows a rapid and quantitative evaluation of the two axes above, thereby describing a structural and interactive style within the system under observation. Each axis is divided in four graded levels (of 2 standard deviations), and gives rise to

sixteen subtypes, characterising a family setting. In addition, this model allows the identification of three areas of functioning in terms of highlighting its *balanced vs. average vs extreme* nature. This model is then conceived so that the two dimensions of family "health" are found in the median values of the two axes, that is to say the "separated-linked" dimension in the axis of cohesiveness, and the "structured-flexible" dimension in the axis of adaptability (hypothesis of a curvilinear correlation). Consequently, in this model, "health" is analogous to an intermediary centre: it defines normality in terms of the balance between different influences. More recent data (Smith, 1997) have however questioned this hypothesis and tend to show that a linear correlation might relate cohesiveness or adaptability to pathological states.

We have used this scale in order to verify if, as suggested by Brent's study (1999), family factors can be correlated with depressive experiences, and particularly, if, as we have previously shown (Zdanowicz & al., 2002; 2004), weak family cohesiveness is associated with high probability of depression.

Our hypotheses can hence be summarised in the following way:

1. An increase in depressive experiences (higher scoring on a depression scale) with age can be observed during adolescence;
2. Depressive experiences are more intense (higher scoring on a depression scale) when family cohesiveness or adaptability is low;
3. Depressive experiences (higher scoring on a depression scale) are more intense when Powerfull others HLC is high and Internality HLC is low.

METHOD

This study was performed between December 1999 and June 1999. We have used the French versions of Olson's FACES III (translated by Fontaine, 1985), and of the MHLC (translated by Janne, 1989).

SUBJECTS AND PROCEDURE

The recruitment of the sample took place in each of the 6 grades of three randomly selected secondary schools (i.e. normally ranging from age 12 to 18) in the province of Namur (Belgium). Schools had to be of general education and have more than 100 students. All students agreed to participate and were included. Under a psychiatrist's supervision, these adolescents were asked to answer a socio-demographic questionnaire (age, gender, high school level, nationality), and to undergo various psychometrics tests. It should be noted that the above sample is considered "healthy" by default. Thus, although its members have not been recruited in a hospital or another health facility, we cannot exclude the possibility that some of them might have been or are presently hospitalised for one or another reason.

In order to further homogenise our samples, the subjects had to be Caucasian and French-speaking students.

Other recorded parameters included: 1/ One question on their general health concern: "In general, do you feel concerned about your health?" Subjects' answers were weighted on a 5 grade Likert-type scale (from "very little" to "very much").

2/ One question about their general well-being: "I feel generally well in my day-to-day life" which was assessed on a Visual AnalogueScale (from "absolutely wrong" to "absolutely true").

In the 2001 follow-up study, four questions were added:

3/ One question on life events: "to what degree do you think that events in the last year have played a role in your actual problems" which was assessed on a VAS (from "absolutely wrong" to "absolutely true").

4/ One question on life events: "to what degree do you think that events in your life have played a role in your actual problems" which was assessed on a VAS (from "absolutely wrong" to "absolutely true").

ANALYSIS AND PRESENTATION OF RESULTS

SPSS for Windows 95/98/NT Advanced Models 10.0S was used for our statistical analyses. Given the considerable number of observations, the distribution of the data, and the necessity to analyse the influence of several co-variables, we used parametric tests. Parson's χ^2 test were used in comparing proportions. Pearson's r coefficient was used to assess correlations between continuous variables, eventually controlled for partial correlation (with a co-variable). Student's t -test was used for comparisons between quantitative variables. Ranges of significance were as follows: $p \geq 0.05$ indicates a tendency; $p \geq 0.01$ indicates significance. All the statistics taken in to account first and second type of errors.

RESULTS

DEMOGRAPHIC CHARACTERISTICS

Age, family composition, academic failure, and health preoccupation

The sample include 325 adolescents. The mean age of the sample was 15,3 ($Sd = 1.8$ year). 10 subjects were 19, and 2 were 20 years old (excluded). 40.4% of the subjects were female and 59.6% male. Most the subjects (80.5%) were living with both their parents; 18% were living in a single-parent family, and 1.5% didn't live with their parents. In most cases (92.1%), grandparents were not living in the same home as the subjects. Most subjects (87.7%) had at least one sibling. Among the former, 35.3% had one sibling (either sister or brother), 28.3% had two siblings, 17.2% had three siblings, 4.9% had four siblings, 1.2% had six siblings, and 0.3% had either five or seven siblings.

Most subjects (81%) never had to repeat a school-year, 15.9% had to repeat 1 school-year, 2.4% had to repeat two school-years.

Although an important proportions of subjects (46.7%) answered that they were weakly concerned about their health, 30.5% answered that they were strongly concerned, 15.6% answered that they were very weakly concerned about their health, 3.7% answered that they were very strongly concerned about their health, and 3.4% answered that they weren't concerned at all.

On Zung's Depression Form, the results ranged from 0.223 to 0.881, with a mean of 0.476 and a standard deviation of 3.1. 3.1% of the subjects scored beyond 0.699 (reference score), suggesting that they were in a depressive state. The relation between Zung-Depression results and age being one of our hypotheses, we will discuss it later in this article.

Gender had a determining effect on Zung-Depression levels. On average female subjects scored higher than male subjects (female mean = 0.51; $sd = 0.10$; male mean = 0.42, $ds = 0.11$; $p = 0.000$; $\chi^2 = 19.19$). Similarly, the number of parents or of siblings is negatively correlated with Zung-Depression levels (parent $r = 0.110$, $p = 0.049$, siblings $r = -0.165$, $p = 0.003$). On the other hand, the number of grandparents living in the subjects' home had no effect on the scores ($r = -0.041$, $p = 0.459$). It therefore appears that the presence of both parents and a large number of siblings exerts a protective effect against depressive symptoms during adolescence. Finally, one should pay attention to the interesting finding that no correlation was found between having had to repeat a school year and Zung-Depression scores ($p = 0.246$ $r = 0.068$), and between having had to repeat a school year and being concerned about one's health ($p = 0.335$, $r = -0.54$).

Effect of the demographic parameters

Three parameters (the presence of grandparents in the family home, having had to repeat school-years, and being concerned with one's health) will not intervene in the following analyses since we have shown that they are not correlated with the depression scale. On the other hand, we must take into account the parameters of gender, of the presence of parents, and of the number of siblings. Therefore, all the following analyses of correlations will be controlled for these parameters. Other standard demographic variables such as ethnic origin, occupation were not considered relevant in the present study since they had already been established as criteria of selection in the research design. As for the socio-economic status, it reflects the national average since education in Belgium is mandatory until the age of 18.

RESEARCH QUESTIONS TESTING

Evolution of depressive symptoms with age

We found a correlation between age and the scoring at the Zung's scale ($p = 0.025$, $r = 0.1614$). Together, this finding as well as our knowledge (based on our previous studies) that age

influences cohesiveness, adaptability, Powerful others HLC and the Internality/Externality Ratio, imply that the following statistical analyses be controlled for this parameter as well.

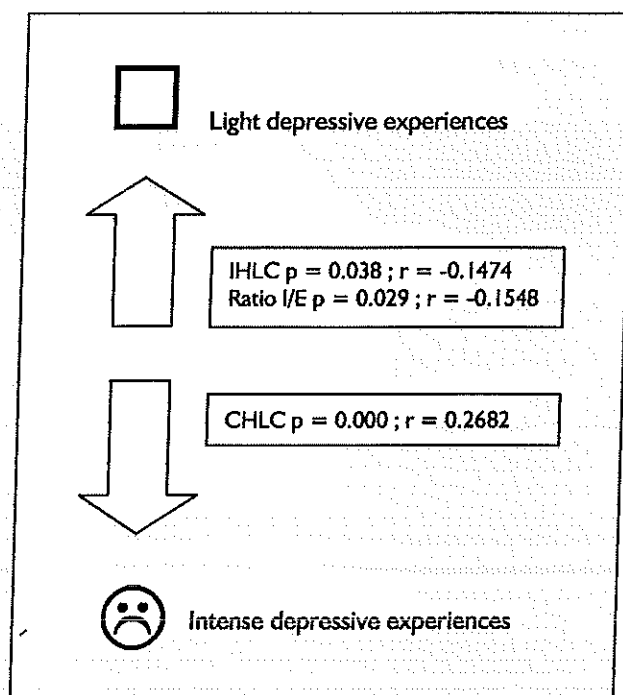
Evolution of depressive symptoms with cohesiveness and adaptability

Family cohesiveness and adaptability were negatively correlated with Zung-Depression scores. A weak cohesion or adaptability score was predictive of a high score on Zung-Depression scale (cohesiveness: $p = 0.000$, $r = -0.3728$; adaptability: $p = 0.000$, $r = -0.2989$).

Evolution of depressive symptoms with Powerful others HLC and Internality HLC

As we can see (e.g. figure 1) there is a correlation between IHLC and Zung-Depression' scores and not with the PHLC. On the other hand, our analysis showed that "Incidentally" CHLC and I/E ratio were also correlated with Zung-Depression.

Figure 1
Correlations between MHLC and depressive experiences



IMPORTANCE OF WELL-BEING AND LIFE EVENTS

Subjects were in a state of well being (mean=7.6/10, sd=2.24). 6/10 young subjects felt that life events that occurred in the last year accounted for the health difficulties they were currently facing. The analysis of these parameters indicate that subjects had a good self-evaluation of their moral state and of its causes since well-being ($p = 0.000$, $r = -0.5094$), last year events ($p = 0.001$, $r = 0.2206$), and life events ($p = 0.000$, $r = 0.2836$) were correlated with Zung-Depression.

COMPARISON BETWEEN HIGH AND LOW SCORE TO THE ZUNG-SCALE

If we compared (MANOVA to control the influence off all variables) the adolescents who scored higher than 0.699 to the Zung-scale with the other one we can say that there is not significant differences between the two group excepted for:

- Number of parents: adolescent with high scoring live more often with only 1 parent ($F = 3.903$, $p = 0.05$)
- Life events: adolescent with high scoring have more life event in the last year (High Zung: life event = 7.5/10 +/- 2.7, Low Zung: life event = 4.64/10 +/- 3; $F = 5.552$, $p = 0.019$)
- Cohesion: adolescent with high scoring have family less cohesive (High Zung: cohesion = 24.5 +/- 7.6, Low Zung: cohesion = 34.7 +/- 6.4; $F = 8.207$, $p = 0.000$)

DISCUSSION

The present study reproduced a part of results on depression that had already been found elsewhere, e.g. the prevalence of depressive disorders (between 1% to 9%) is coherent with 3.1% of our sample whose score exceeded the critical threshold beyond which the presence of a major depressive disorder can be suspected. We can also establish a connection between two results of the present studies and related data found in the literature: the prevalence of depression is higher among young female adolescents, and it increases with age from childhood to adolescence. This matches our finding that female subjects had more severe depressive experiences and that depressive experiences increase with age in both genders. However, it should be noted that, in contrast to the data found in the literature, the subjects of the present study don't meet the diagnostic criteria for major depressive disorder except, maybe, for those with a high score. Thus our data show depressive experiences might occur among healthy adolescents, and that they do not correspond to the major depressive disorder (except maybe for the 3,1% which scored more than 0.699). Hence, we can easily hypothesise that "pathological" subjects deviate from the mean while the range between the mean and the "pathological" zone decreases with age.

These results seem allow us to conceive of a continuous rather than a discontinuous link between depressive experiences and major depressive disorder. Moreover, the correlations between family interactions and depressive experiences we found in our sample show to what degree these depressive experiences develop in a family system which, in turn, causes an increase in MHLC-related internality scores, as show in previous studies (Tamplin & al., 2001, Zdanowicz & al., 2002).

CONCLUSION

Apart from the theoretical considerations that were redeveloped in the discussion section and that obviously require prospective studies pertaining to the future of the research subjects, it seems to us that the present study confronts us with various interrogations as to the diagnosis of major depression during adolescence as well as to the limits of depressive experiences.

First, one should wonder whether these criteria are not too narrow (shouldn't the diagnostic criteria be widened in order to allow the treatment of those who don't meet the present criteria but who are exposed to considerable depressive experiences?) or narrowed (do all the adolescents that were identified as depressive need treatment when the boundaries between normalcy and pathology are so tenuous?).

Secondly, at this age, there might be a co-diagnostic that needs to be directly investigated: the family functioning. Besides it is quite amusing to notice that only several years ago, families were criticized for being too protective, whereas here we notice the importance of family cohesiveness.

Thirdly, before knowing more about the limits between pathology and normalcy, the criteria of depression should be strictly met if we want to avoid finding ourselves with impressive numbers of adolescents to treat.

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