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► **To cite this version:**

Daniel Favre, Jacques Joly, Christian Reynaud. THE MEASURE OF EMPATHY, EMOTIONAL CONTAGION AND EMOTIONAL CUT-OFF AS AN INDIRECT INDICATOR OF THE EFFICIENCY OF TEACHER TRAINING FOR PREVENTING VIOLENT BEHAVIOR AND SCHOOL FAILURE. *Psychology of Empathy*, 2011. hal-01695885

HAL Id: hal-01695885

<https://hal.umontpellier.fr/hal-01695885>

Submitted on 29 Jan 2019

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Chapter 8

**THE MEASURE OF EMPATHY, EMOTIONAL
CONTAGION AND EMOTIONAL CUT-OFF AS AN
INDIRECT INDICATOR OF THE EFFICIENCY OF
TEACHER TRAINING FOR PREVENTING VIOLENT
BEHAVIOR AND SCHOOL FAILURE**

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ABSTRACT

Our research works on the prevention of violent behaviors in the school environment have brought us to investigate students' capacity to share and regulate emotions as possible indicators of the risk of developing violent behaviors. Unfortunately, the conceptual field concerning social emotions is rather unsettled and the concept of empathy remains to be consensually defined. For this reason, in a preceding critical and historical study, we carefully distinguished empathy from the related concepts of sympathy, emotional contagion and personal distress, from what we propose to call "emotional cut-off." We then developed and validated a CEC test with three components: emotional cut-off, empathy, and emotional contagion. The validation process took place in France, Switzerland, and Canada.

After a presentation of the definitions of empathy, emotional contagion, and emotional cut-off, this chapter summarizes the validation results. A number of results show that the "emotional cut-off" component is positively correlated with the scales that measure delinquency or the risk of uncontrolled aggressiveness. This component is also associated with many learning difficulties among pupils. Lastly, emotional cut-off is more marked among 9-15 year-old boys than among girls of the same age group. Conversely, empathy is more often associated with the dimensions that characterize

young persons in harmonious balance with their environment, as well with control of their aggressiveness. We observe that for empathy thus redefined, there are no more gender differences; empathy ceases to be a competence more developed by girls, as is often reported in the North-American scientific literature. On the other hand, emotional contagion is more developed among girls than boys, and with it the propensity to project their emotions onto the outer world.

The second part of this chapter describes results obtained following a specific (50hours) training for teachers. The objectives of the training program are reported and results are compared by group (experimental vs. control), by age and sex of the students, and by educational path. Results show an improvement in the empathy score and school achievement of students in French elementary schools and Swiss high schools.

Emotional cut-off may well constitute an indirect and relevant indicator to measure a person at risk for violent behavior or school failure. As for empathy, since it derives ontogenetically from contagion, it is an emotional, cognitive, and social competence, which for teachers may constitute a pedagogical goal whose evaluation is made possible by the CEC test.

Keywords: empathy; emotional contagion; emotional cut-off; self-esteem; violence.

INTRODUCTION

This chapter relates the development of an original test for measuring empathy among youth and illustrates its usefulness as an indirect indicator of the effectiveness of teacher training programs seeking to prevent student violence and academic failure.

Our research works in France and Canada conducted between 1994 and 1997 demonstrated that violent students (whose aggressiveness was 6 or 7 times greater than that of control subjects) almost always proved incapable of identifying their emotions in situations of frustration and, unlike control subjects, externalized the causes of what was not working in their lives (Favre and Fortin, 1997). Over the course of a number of communication workshops, we were able to confirm that they appeared to be cut off from what they felt. The control subjects (of the same sex, age, level of academic achievement, and social-family background) seemed much more in touch with their emotions (Favre and Joly, 2003). Moreover, study of language productions indicated that this psychological component was more marked among boys than girls, meaning that boys had a stronger tendency to be out of touch with their emotions (Favre and Joly, 2001).

These prior research studies used a large number of parameters, which proved to be quite impractical and cumbersome to evaluate the effects among students of their teachers' training for preventing violence. Newer research involved indirectly following students so as to avoid the risk of overly influencing them. They were not supposed to know that we were interested in their aggressiveness. We therefore needed an "indirect" indicator of violence. Interestingly, Mehrabian (1997) had shown that empathy is negatively and very specifically correlated with violent behaviors. This means that empathy or the capacity to relevantly imagine the intentions and feelings of others is more or less incompatible with violent behaviors, as we were able to confirm over the course of a study on the language productions of adolescents considered to be violent.

It therefore appears to us that the capacity for empathy has to do with democratic know-how, and measuring it using a valid test—despite the simplistic appearance of such a measurement instrument—is to provide ourselves with a good indicator of change to assess the influence of our interventions on the prevention of violence and the development of democratic know-how in the school. Increasing the capacity for empathy might therefore provide an indication for effective prevention of violence among students in the classes concerned.

The feasibility of the indication nevertheless depends on the rating scales' ability to distinguish empathy from what it is not; however, there is no consensus in the scientific literature when it comes to the definition of empathy. In a previous article (Favre, Joly, Reynaud and Salvador, 2005), we showed that this absence of agreement over a definition of empathy (sometimes understood from a cognitive standpoint, sometimes from an affective one) has led to confusion detrimental to scientific communication and the advancement of research in this area, despite its growing relevance today. We in fact noted the absence of clear demarcation from other emotional phenomena such as sympathy (compassion) or emotional contagion. In this critical and historical study (Ibid.), we distinguished empathy from related notions such as sympathy, personal distress, emotional contagion, and what we propose to call “emotional cut-off.”

We were consequently led to conceptually define three modes of relationships with others:

- Emotional contagion, which would appear to be an innate biological aptitude to allow oneself to be seized, gripped by the emotions of others, and which more particularly characterizes a very close bond or symbiotic states ontogenetically preceding empathy.
- Empathy, which can be seen as a capacity acquired over the course of psychogenesis to imagine what others are feeling or thinking while distinguishing it from one's own feelings and thought.
- Emotional cut-off, which can be considered a process of distancing and cutting oneself off from emotions or affects that lead, most often unconsciously, to a feared loss of control and/or suffering. Emotional cut-off contrasts with empathy toward others or toward oneself but can, in emergency situations, constitute a useful response to “dangerous” emotional contagion.

To operationalize this distinction, we have constructed and published the CEC (Cut-off—Empathy—Contagion) test enabling separate measurement of empathy, emotional contagion, and emotional cut-off. The test has been validated based on data collected in France, Switzerland, and Canada (Favre, Joly, Reynaud and Salvador, 2009).

This chapter aims to present an overview of the results of this validation process, as well as to demonstrate the usefulness of the CEC test and others for evaluating the effects of a teacher training program intended to reduce violent behavior among children.

1. VALIDATION OF THE CEC TEST

In this section we will briefly present the test, the validation process, and a few complementary results permitting an indication of its validity.

The CEC test involves twelve situations with which children and adolescents are commonly faced; subjects must indicate their reaction in each situation. In the first version of the test, subjects are asked to check off their way of reacting among three mutually exclusive choices situated in the register of emotional contagion, empathy, or emotional cut-off. The number of answers in each register leads to three corresponding scores. A second version of the test, which has proved more reliable, presents 36 items related to the 12 situations, with three different ways of responding to these situations (one with empathy, one with contagion, and one with emotional cut-off). Three Likert scales, based on the 12 situations, permit the calculation of three scores.

Validation studies with elementary and high school students in three countries, related by Favre et al. (2009), among others, also used various other measurement instruments. The most important are the BEES and the ETES.

The BEES is the Balanced Emotional Empathy Scale developed by Mehrabian's team and implemented for many years (Mehrabian and Epstein, 1972; Mehrabian et al., 1988; Mehrabian, 1996). It consists of 30 items each associated with a Likert scale (with 7 values but reduced to 5 for children in elementary school). It was chosen because the author shows that the empathy test is negatively and very specifically correlated with violent behaviors (Mehrabian, 1997). The positive variations in the BEES score can thus constitute an indicator of indirect change of subjects' ability to control their aggressiveness.

The other test used in these various studies is the Échelle Toulousaine de l'Estime de Soi (Toulouse self-esteem scale, or ETES) composed of 60 items, developed and validated by Oubrayrie, de Léonardis and Safont (1994) with youth between 9-16 years old. We have adapted this scale for children in elementary school by retaining only the first 23 items. This scale was chosen because many works associate violence with a regressive process, a division, for both the author and victim of violence, causing a strong feeling of guilt that is more or less repressed (Van Caneghem, 1978).

Self-image is very frequently altered negatively and recovery must take into account the restoring of self-esteem to avoid subsequent misconduct. If our work with teachers has been effective, their students should be less violent and it should consequently be possible to observe an improvement in their self-esteem. This explains why we have introduced a third test, the ETES.

With these three "measurement" instruments, we studied how boys and girls in elementary school (9-11 years old) and in high school (11-15 years old) implement the various above described relationship modes with others and how these relationship modes can serve as an indicator to assess the effectiveness of a specific training for teachers in view of preventing violent behaviors and learning difficulties, as these two phenomena appear to be strongly correlated (Fortin and Bigras, 1996, Fortin and coll., 2004). We also aimed to highlight possible correlations between ETES self-esteem components and the various emotional modes of relationships to others, using the BEES or the CEC.

1.1. In Elementary School

A first study involved 65 students between 9 and 11 years old distributed in two schools located in educational priority areas or ZEP (priority education zone) in Montpellier, France. The first school had 33 students (13 girls and 20 boys) and the other, 32 students (9 girls and 23 boys), all of whom answered the questions of the CEC, BEES, and ETES tests. As indicated in Table 1, the two BEES and CEC tests show, each in a different manner, the modes of emotional expression among boys and girls 9 to 11 years old.

Table 1. Comparison of student means according to sex

Scales	Sex		T-test	P
	Female	Male		
Contagion	3.41	3.17	0.56	0.575
Empathy	6.68	5.79	1.99	0.051*
Cut-off	1.91	3.05	-2.39	0.020*
BEES - total	15.59	7.14	2.76	0.008**
ETES - Emotional	22.27	20.41	1.64	0.106
ETES - Social	16.00	15.45	0.86	0.391
ETES - Academic	15.14	13.12	2.00	0.050*
ETES - Physical	20.50	20.43	0.09	0.932
ETES - Future	12.14	9.71	3.00	0.004**
ETES - total (reduced version)	86.04	79.12	2.68	0.009**

Statistical significance: * $p < 0.05$ ** $p < 0.01$.

Boys between 9 and 10 years old on average significantly distinguish themselves from girls of the same age on the cut-off and empathy scales of the BEES. It can be seen that girls and boys are not significantly different on the contagion scale, which will not be the case for adolescents. Thus, at the elementary school level, boys indicate greater cut-off (3.05) than girls (1.91), but less empathy (5.79 vs. 6.68). The empathy measured by the BEES is significantly weaker among boys than among girls (7.14 vs. 15.59).

As for self-esteem, boys have a significantly lower self-esteem average (13.12) than girls (15.14). The same is true for future self-esteem (9.71 vs. 12.14). These differences translate into a significantly weaker total score for boys (79.12) than for girls (86.05), which will not be the case at adolescence.

1.2. In High School

In this second study, a total of 203 students answered the questions of the CEC, BEES, and ETES tests in three *collèges* or high schools in the canton of Vaud in Switzerland.¹ Three

¹ That is, 103 girls and 100 boys; 33 are 10 years old, 37 are 11 years old, 4 are 12 years old, 52 are 13 years old, 61 are 14 years old, 12 are 15 years old, and 4 are older or age unknown.

variables are taken into account and studied: student age, sex, and belonging to an educational path for brief technological studies or longer studies (state school or general high school). The students in the Swiss high schools are in their fifth year (equivalent to the sixth year in France), in their eighth year for brief educational paths, and in their eighth year for longer educational paths (equivalent to the fourth year in France).

As indicated in Table 2, the two BEES and CEC tests show, each in a different way, the modes of emotional expression among boys and girls on average 11 to 15 years old (Favre et al., 2009).

Table 2. Comparison of Swiss adolescents' averages according to sex

Scales	Sex		T-test	P
	Female	Male		
CEC - Contagion	3.05	2.04	4.38	0.000**
CEC - Empathy	7.31	7.45	-0.54	0.399
CEC - Cut-off	1.63	2.50	-3.93	0.000**
BEES - total	47.553	31.316	5.00	0.000**
ETES - Emotional	9.69	13.23	-4.73	0.05*
ETES - Social	7.54	8.51	-1.13	N.S.
ETES - Academic	4.10	6.28	-1.81	N.S.
ETES - Physical	6.54	11.40	-4.76	0.05*
ETES - Future	10.24	9.57	0.83	N.S.
ETES – total (60 items)	38.13	49.01	-3.44	0.05*

N = 103 girls and N = 98 boys. Statistical significance: * p < 0.5 **p < 0.1.

Male and female adolescents significantly distinguish themselves when it comes to the cut-off and emotional contagion scales, as well as the total BEES. It can be observed that girls and boys are no longer distinguished (unlike younger children, cf. Table 1) when it comes to the empathy scale. Boys still show greater cut-off (2.50) than girls (1.63), but less emotional contagion (2.04 vs. 3.05). The positive score on the BEES is, significantly, even weaker among boys than among girls (31.31 vs. 47.55).

As for self-esteem, boys have a significantly stronger emotional self-esteem mean (13.23) than girls (9.69). The same holds true for physical self-esteem (11.40 vs. 6.54). These differences translate into a significantly stronger total score for boys (49.01) than for girls (38.13). It should be noted that this is the opposite of what was observed in the group of younger children.

In the area of academic success, the CEC test proves to be discriminating in this study conducted in Switzerland. Emotional cut-off is significantly greater in the brief educational path (students with difficulties in academic learning) than in the longer educational path (students aiming to continue their studies in high school) (2.46 vs. 1.81) and empathy is significantly weaker (7.08 vs. 7.82). These differences cannot be attributed to unequal representativeness of genders in these educational paths.

In the shorter educational path, boys show greater emotional cut-off and girls have greater emotional contagion than in the longer educational path. These results are consistent

with those of other studies subsequently carried out in France and Canada, showing that empathy is slightly correlated with academic success and cut-off is fairly strongly correlated with academic failure, especially in “French” (Favre et al, 2009).

1.3. Other Results

Our other works have made use of a number of different tests to demonstrate the validity of the CEC (Favre et al., 2009). In sum, the “emotional contagion” component correlates positively, but fairly moderately or weakly, with the Beck depression score (0.38) and anxiety score (0.32).

The “empathy” component demonstrates slightly more significant correlations in the analyses conducted, but they are all fairly weak. It has been observed to have significant positive correlations with the teacher's attitude toward the student (0.26), the cooperation scale (0.24) of Gresham, and the cohesion scale (0.26) of family functioning. Negative correlations are obtained with measures of depression (-0.21) and anxiety (-0.14), frequency of delinquent acts (-0.17), and the variety of these acts (-0.15) as well as the youth's attention problems (-0.19).

Certain results demonstrate that emotional cut-off positively correlates with rating scales for delinquency or the risk of uncontrolled aggressiveness (0.26 with three scales) as well as attention problems (0.19). It is also associated with learning difficulties.

2. THE USE OF EMPATHY MEASURES TO EVALUATE TEACHER TRAINING

In this chapter we show that valid measurement tests of empathy such as the BEES and CEC are useful for evaluating the effect of teacher training to reduce violent behaviors among students. We begin by specifying the principal objectives to attain with students.

The content of the teacher training program to achieve these objectives as well as the modes of the training will just be mentioned but cannot be detailed in this chapter; they are already described in Favre (2007). Next we will present the quantitative and qualitative assessments of the effects of the teacher training on students at the elementary and high school levels.

2.1. Objectives of the Teacher Training Program

The intent was first to develop latent emotional and cognitive resources among students to enrich their “inner language” in view of improving their communication with others and to help them deal with the situations of cognitive destabilization represented by learning situations.

Our approach has been focused on language for many years. Language is believed to have two essential functions: *a social function* for communicating with others and *a*

regulating function for having control over one's behavior and thus having the freedom to change it.

The development of inner language should progressively enable the youth in question to replace the “short circuit” with a self-regulated “long circuit” (perception of situations of frustration => violent reaction) and hence to develop less automatic behaviors that better serve the student's conscious intentions.

Second, the development of these resources should also allow students to address situations of cognitive destabilization with greater confidence and to achieve improved academic learning, as shown by Bélanger and coll. (1994), to confront the differences presented by others with less awkwardness and to be less projective in their relation to the world.

It appears to us that such resources constitute an essential basis for students to be able to construct democratic know-how. The principal manifestations of this know-how are considered to be the recognition and identification of one's own emotions, the ability to recognize the emotions of others and the “correct reasons” that lead them to act the way they do, and the ability to express one's own needs and to negotiate their satisfaction using language.

As a result, in this training we have attempted to bring teachers to pursue four crosscutting objectives with their students:

- 1st objective: to assume that others are different from oneself and that they have reasons just as good as one's own to think what they think, act the way they act, say what they say, and feel what they feel;
- 2nd objective: to admit that having feelings and experiencing emotions is not a weakness but rather something to value, a source of important sensations and information on oneself and the world;
- 3rd objective: to experience that expressing one's emotions is a source of strength, it is to dare to exist in one's entirety, while masking these emotions is to display weakness;
- 4th objective: to become tolerant and “leave one's door open” to other points of view, to admit that all “truths” are true only in a given context and that knowledge of this context is just as important as the truth itself.

To reach these objectives, a change of culture had to be negotiated first with the teachers, then with the students and their parents. It was necessary to negotiate this change because the conscious adhesion of those involved is required in order to supplant *values of competition based on the weakness of others and their exclusion* with *values of solidarity based on the cooperation and inclusion of all members of society*.

In light of the fact that the “normal” maturing of students could be the source of a possible change, the various tests were conducted with control students (teachers without training) of the same age and academic grade level in a school presenting socio-economic characteristics similar to those of the experimental school.

The statistical treatment allowed us to determine that the classes were not, initially, significantly different. The results of the various tests collected before and after the training are compared (cf. Tables 3 and 4).

2.2. Relation between the Teacher Training in the Experimental Class and the Prevention of Violence

This research was carried out over a two-year period corresponding to the *Coursmoyen* (CM1 and CM2) in a elementary school within a ZEP in Montpellier, France. Sixty-four students were directly concerned by the evaluation, but all students of the experimental school benefited from the training of the entire teaching team. The results presented in the preceding tables came from these students. Table 3 provides the results of the tests in which a pre-post difference proved to be significant.

Table 3. Evolution of experimental students and control subjects in elementary school according to the different tests

Variables	Classes	Means Pretest (beginning CM1)	Means Post-test (end CM2)	Analysis of variance		
				Sources of variations	F	p
Positive BEES	Experimental	11.57	14.47	Status	9.47	.003**
	Control	8.97	5.00	Time/exp. Time/control	1.89 3.41	.175 .070
Negative BEES	Experimental	0.90	-2.97	Status	0.01	.918
	Control	-0.35	-2.03	Time/exp. Time/control	3.97 0.73	.051* .396
BEES - total	Experimental	10.67	17.43	Status	4.82	.032*
	Control	9.31	7.03	Time/exp. Time/control	7.20 0.79	.010** .379
ETES - total	Experimental	81.40	86.23	Status	0.13	.725
	Control	80.93	85.17	Time/exp. Time/control	7.09 5.27	.010** .025*

Experimental students: n = 31; Control students: n = 33. Statistical significance: * p < 0.5 **p < 0.1.

An important result emerges following the post-test: the capacity for empathy, according to the BEES, significantly increased in the experimental class by 86%, while this same score did not significantly change in the control class. The effect on the “emotional cut-off” variable that partially overlaps with the results of the “negative BEES” is clear, even if it is not very significant in the first case (the experimental class mean ranges from 2.43 to 1.97 with $p < 0.08$, but it hardly changes among control subjects [2.97 to 2.76]). Because it includes fewer items with a relatively small student population, this test proves not to be very discriminating here, but it is much more so with other variables (sex, age, academic results, correlations with the BEES), as we have seen. Finally, the statistical results show a weak but significant increase in self-esteem in the experimental class and in the control class. This increase therefore does not appear specific to our training for the prevention of violence, but can probably be attributed to the fact that, in these two schools, teachers are involved in a number of projects favoring student success.

2.3. Results Following the Teacher Training Program at the High School

The training here concerns only 12% of the teachers in a French-speaking Swiss high school composed of students from 45 different nationalities (Kurdish, Turkish, Serbian, Kosovar, etc.). The tests were conducted in different classes in the establishment and involved 94 adolescents or pre-adolescents. In phase 2 (post-test) of this research the students of Swiss high schools are at the end of their 7th year, as well as at the end of their 9th leading to brief educational paths or leading to longer paths. Over two academic years, these students had two types of teachers: those who followed the training and those who did not. The control classes are taken in two other establishments presenting the same categories of students (104 adolescents tested). In these three establishments, the teachers are involved in several pedagogical reforms, including one that concerns evaluation practices. The criteria for choosing control establishments, the content of the training, the period, and the duration are identical to those in the previous research. In Table 4 below, it is possible to see the principal variables affected by the teacher training.

Table 4. Evolution of students in experimental and control classes in high school according to the different tests

Variables	Classes	Means <i>Pre-test</i>	Means Post-test	Analysis of variance		
				Sources of variation	F	p
CEC - Contagion	Experimental	2.58	2.08	Status	1.09	.298
	Control	2.60	2.51	Time/exp. Time/control	5.17 0.15	.024* .695
Positive BEES	Experimental	28.42	24.83	Status	2.07	.153
	Control	32.72	26.54	Time/exp. Time/control	4.26 11.78	.041* .001*
Negative BEES	Experimental	-6.06	-11.20	Status	0.05	.829
	Control	-8.76	-9.37	Time/exp. Time/control	6.04 0.08	.015* .777
ETES - total	Experimental	222.23	223.68	Status	0.73	.394
	Control	216.72	223.47	Time/exp. Time/control	0.30 5.93	.588 .016*

Experimental students: n = 94; Control students: n = 109. Statistical significance: * p < 0.5 **p < 0.1.

When considering all the students in the experimental classes, it is impossible to point up a massive effect of the training when it comes to empathy score (BEES or CEC). The score for the “negative BEES” score, however, significantly decreases in the experimental classes (and this increases the total score for empathy). This scale of the BEES also enables an evaluation of emotional cut-off, albeit less specifically than our CEC test. The significant decrease in the score for “emotional contagion” of the CEC may explain why the “positive BEES” dimension has decreased, thus lowering the total score for empathy (BEES total). It should be recalled that the positive scale of the BEES mixes together, in our view, the emotional contagion and the empathy as we defined them earlier. Since the training particularly seeks to enable students to be less affected by contagion, the global score for

empathy according to the BEES appears to be little affected by the training. Nevertheless, this analysis may not be the right one or may be discussed, considering that the positive BEES score also decreases significantly in the control establishment without affecting the score for emotional contagion.

As with the elementary school students, the “self-esteem” indicator (ETES) does not seem to be specific to the prevention of violence. The significant increase in the score of the control classes here again illustrates teachers' successful efforts to allow the academic success and the social integration of these high school students with diverse ethnic backgrounds. But to deepen understanding of the effects of the teacher training on students, we propose to explore the effect of the training, variable by variable. One of these variables could be the “class” group; we will then see the impact of the training according to student age, sex, and current educational path.

As in the previous table, to streamline the presentation of results we will present only the statistically significant modifications in the case of each of these variables.

2.4. Modifications, Class by Class

Out of the 5 experimental classes and the 6 control classes (see Table 5), those especially affected by significant changes are the 5th year classes of the pre-test among both experimental and control students.

Table 5. Pre-test / post-test differences according to students' classes

Variables	Classes	Means <i>Pre-test</i>	Means Post-test	T-test	
				Value of t	P
CEC - Cut-off	Control (class 2; N=16)	2.82	1.93	2.040	< 0.05*
CEC- Contagion	Experimental (class 1; N = 18)	3.72	2.67	2.22	0.027*
	Experimental (class 2; N=17)	2.94	1.94	2.05	0.042*
Negative BEES	Experimental (class 1; N = 18)	1.89	-13.44	2.906	0.006**
Positive BEES	Control (class 2; N=16)	41.05	27.21	4.851	0.000**
BEES - total	Experimental (class 1; N = 18)	30.42	42.72	-2.015	< 0.05*
	Control (class 1; N = 19)	56.3	37.42	3.548	< 0.05*

Statistical significance: * $p < 0.5$ ** $p < 0.1$.

The Student test shows significant changes in the classes of the youngest experimental students in particular in class 1, changes that go in the direction of successful prevention of violence since the total score for the BEES has increased considerably (from 30.4 to 42.7). This is especially so since the increase is due to the negative BEES score, which has strongly

decreased (from 1.89 to -13.44) which, it should be kept in mind, corresponds to emotional cut-off. This last item decreased significantly in control class 2. Contagion also decreased in the two experimental classes (from 3.7 to 2.6 for one and from 2.9 to 1.9 for the other), which also goes in the direction of the prevention of violence, like the decrease (from 2.8 to 1.9) in emotional cut-off observed for control class 2. On the other hand, for the other control class, the global score of the BEES strongly decreased, going from 56 to 37.

2.5. Modifications According to Student Age

We also verified change among the youth in the experimental and control classes according to their age in the pre-test (10 to 13 years vs. 14 years and older). Table 6 contains the results of the significant differences between the pre and post-test. Only the younger students (10 to 13 years) in the experimental classes show significant changes.

Both significant changes for experimental students go in the direction of the prevention of violence with a decrease (from -3.26 to -11.57) in the negative BEES and a decrease (from 3.23 to 2.31) in emotional contagion, while all control students are, as previously seen, affected by a decrease in positive BEES. This decrease is stronger (from 34.70 to 25.8) among younger students than among older students (from 30.1 to 24.07). The increase in social ETES among younger control subjects (from 5.4 to 9.05) and in academic ETES among older control subjects (from 2.47 to 5.01) is not consistent with the changes in the BEES and seems contradictory with the decrease (from 11.91 to 9.05) in the score of the future ETES among the younger control subjects.

Table 6. Pre-test / post-test differences according to student age group

Variables	<i>Younger students</i> = <i>10 to 13 years</i> <i>Older students</i> = <i>14 to 18 years</i>	Means Pre-test	Means Post-test	T-test	
				Value of t	P
CEC - Contagion	Experimental (younger)	3.23	2.31	2.14	0.035*
Positive BEES	Control subjects (younger)	34.70	25.8	2.92	0.004**
	Control subjects (older)	30.11	24.08	2.12	0.035*
Negative BEES	Experimental (younger)	-3.26	-11.57	2.32	0.023*
ETES - Social	Control subjects (younger)	5.40	9.05	0.97	0.004**
ETES - Future	Control subjects (younger)	11.91	9.05	2.13	0.036*
ETES -Academic	Control subjects (older)	2.47	5.01	-2.12	0.036*

2.6. Modifications According to Educational Path

We also verified the effect of the different educational paths. Only the two control classes belonging to the longer educational path show significant differences, as seen in Table 7.

Table 7. Pre-test / post-test differences according to student educational path

Variables	Longer educational path	Means Pre-test	Means Post-test	T-test	
				Value of t	P
Positive BEES	Control subjects	28.58	18.82	2.5759	0,011*
BEES - total	Control subjects	44. 60	28.79	2.58	0.011*

The results do not go in the direction of preventing violence among control students in the longer educational paths since the global BEES score decreased strongly and significantly from 44 to 28.

2.7. Modifications According to Sex of Students

Table 8 shows that only the girls in the experimental group exhibit a modification, which in fact goes in the direction of violence prevention.

Table 8. Pre-test / post-test differences according to sex of students

Variables	<i>Girls / boys</i> Control / experimental	Means Pretest (beginning of 5th year and beginning of 8th year)	Means Post-test (end 7th year and end of 9th year)	T-test	
				Value of t	P
Positive BEES	(Control) girls	37.07	28.13	3.44	0.000***
	(Control) boys	26.83	20.28	2.13	0.035*
Negative BEES	(Experimental) girls	-9.36	-17.02	2.35	0.021*
BEES - total	(Control) girls	49.03	39.33	2.17	0.031*
ETES - Social	(Control) boys	7.55	10.32	-2.35	0.020*

The negative BEES strongly decreased (from -9.36 to -17.02) among the girls in the experimental group. The three modifications concerning empathy of the control group among boys and girls, however, go in the opposite direction. The total BEES among girls dropped from 49 to 39, and the positive BEES among girls dropped from 37 to 28 and among boys

from 26 to 20. On the other hand, the “social” ETES among boys control subjects rose from 7.5 to 10.3.

It was possible to complete these quantitative results with the teachers’ qualitative evaluation at the end of the training, as well as with records of treatments applied to certain violent situations described by teachers over the course of the two years of this training.

2.8. Links between the Prevention of Violence, the CEC Test, and Academic Results

Because we had access to national French evaluations in French and Mathematics at the end of the *cours élémentaire* (CE2) and in the beginning of the sixth year of *Collège (in France as well)*, it appeared interesting to highlight possible links between the academic success measured by the grades achieved in these evaluations and the three components of our CEC test following the teacher training for the experimental classes.

The negative link observed at the beginning of the *cours moyen* (CM1) between emotional cut-off and success in French can be found at the beginning of the sixth year among students of the experimental class ($r = -0.42$, $p = 0.05$) and among control students ($r = -0.44$, $p = 0.04$), hence the very strong and very significant correlation when we take all students ($r = -0.49$, $p = 0.001$), which remains high and significant if we also take the sum of the results in French and Mathematics ($r = -0.39$, $p = 0.01$). Emotional cut-off thus seems to be negatively associated with successful learning in French.

The BEES total score for its part is still significantly and positively correlated with the results in French but among students of the control classes only ($r = 0.47$, $p = 0.03$) versus a weak and nonsignificant correlation among the students of the experimental classes ($r = 0.15$, $p = 0.52$). It should be kept in mind that the BEES score increased considerably (+86%) in the experimental classes, while it tends to remain stable or decrease for the control classes.

Finally, in the experimental classes we clearly see a correlation between an increase in the empathy score on the CEC test and an increase in Mathematics ($r = 0.41$, $p = 0.058$), which yields a correlation for the grade average (French + Mathematics) ($r = 0.41$, $p = 0.06$). Despite the somewhat weak significance of this result, it confirms the tendency observed in CM1.

DISCUSSION AND CONCLUSIONS

Our results, including those detailed in this chapter on French and Swiss youth as well as others involving 218 Canadian (Quebec) adolescents from 13 to 14 years old (see Favre et al., 2009), converge to indicate that the score for emotional cut-off is associated more particularly with violence, academic failure, and boys.

The results presented in the first section, in Tables 1 and 2, confirm our previous results (Favre and Joly, 2001) since an explanation is given for the fact that violent adolescents, more than control subjects or adolescents (violent or not), never or almost never mentioned feelings or emotions in situations of frustration.

The emotional cut-off component is clearly and significantly more developed among boys than girls, and this begins early since it can be observed as of 9 years of age. Emotional cut-off is opposed to empathy and is directly correlated with insufficient academic results. Indeed these are mostly the students who exhibit learning difficulties and who are oriented toward brief and technological educational paths (cf. Favre and coll, 2009).

By opposing empathy, emotional cut-off also translates into being cut off from others, from those different from oneself. This makes it impossible to imagine what these others are thinking and feeling, and results in a misunderstanding of the intentions of others; they become frightening. Violent behaviors are then likely to become a solution to exorcise fear, and in this case emotional cut-off eliminates the natural restraint of emotional contagion or empathy. The author of violence deprived from a representation of what the other is feeling becomes much less inclined to stop. To the contrary, violence can become a source of pleasant excitement that these people have trouble obtaining otherwise, and with time an endogenous dependency (Favre and Fortin, 1998; Fortin and Favre, 1999). We previously defined violence as “all behavior resulting from the acquired need to make others weak, uncomfortable, and powerless that which lead to be able to make one feel strong, comfortable, and powerful.” This does not mean that girls cannot exhibit emotional cut-off. This is the case, as we have observed, when they are themselves victims of violence or authors of violence, but the situation is clearly less frequent than with boys. Statistically speaking, what is more frequent is the tendency toward emotional contagion in relationships with others.

The emotional contagion component is, indeed, more specifically associated with girls than boys starting at adolescence. This signifies that they are easily influenced by the emotional atmosphere and do not easily allow themselves to have their own emotions when they are in opposition to this context. When emotional contagion is strong, the tendency is to imagine that the other is like oneself and to feel strengthened when many individuals feel the same thing. As in the case of cut-off, contagion maintains a sense of strength based on an illusion. In the first case, it is because the other is made weak; in the second, it is because one has a sense of merging with something larger and stronger than oneself. In both cases, the sense of strength does not come from within but depends on others and would disappear if these others stopped fearing one or if one no longer wished to merge with others, but rather to exist as a separate and autonomous individual.

Scores obtained by girls and boys in the BEES test of Mehrabian, which mix together contagion and empathy, indicate that in our study the results are in line with those found in North America, with higher values for girls. It was important to verify this point, as these are the same subjects who passed the CEC test. And yet, the results for the score of empathy as we have redefined it show that there is no difference between boys and girls from 12 to 14 years old. Empathy, distinguished from the emotional contagion component, appears (at adolescence) equally accessible to boys and girls and additionally associated with academic success, rather than a feminine specificity, as set down in North American works.

The component of empathy is therefore not exclusive to the female sex but rather part of a specific mode of relationships with others. This mode involves “opening” oneself to allow the other to exist in one’s private space of representation as a real Other. This recognition confirms and affirms the existence of the other and gives us strength, at the same time as we become the authors of our own strengthening. Hence, others begin to make us less afraid. This confirmation of others stems directly from the empathic link, from accepting their

coherence: others have “good reason to think what they think, say what they say, do what they do, and especially to feel what they feel.” This unconditional acceptance of persons must be associated with a conditional acceptance of their behavior: all behaviors are not acceptable and living in society implies the drawing, using social laws, of boundaries between what is acceptable and what is not. The strength given by the establishment of the “elementary social link” of empathy with others appears to originate from this acceptance of persons and the distinction between what they produce (their behavior) and what they are.

It is preoccupying that we were also able to point to the presence, in brief educational paths, of students who have often exhibited academic difficulties and whose relational modes with others bring them to fall back the most on violent behaviors. This raises the question of the risk of grouping these students together. These students will spend a great deal of their social time in an environment made up of students who resemble them, who react like they do: strongly in cut-off for boys and strongly in contagion for girls. In these educational paths, we can thus expect greater communication difficulty between boys and girls since the empathic component is less developed and the difference in the modes of emotional expression between genders are more accentuated. The work of teachers to valorize these students sheds light on the fact that boys in these classes have strong self-esteem, stronger than the girls in brief educational paths, but how then can we explain that it is the girls in longer educational paths who are the highest achievers at school and who have the lowest self-esteem? There is therefore a risk that violent behaviors, which weaken others, are not seen as abnormal but rather as something that bolsters self-esteem.

As for the prevention of violence and its assessment, which was the final objective of this study, our results suggest that it is the girls who change the most, i.e. positively in the experimental establishments where we trained teachers, or negatively (decrease in empathy) in control establishments. This undoubtedly indicates once again an effect of the emotional contagion component, which is more developed among girls than boys since the latter are by nature more resistant to change because they are more in emotional cut-off.

In our view, preventing violence appears possible only if we take into account the role played by Western culture, i.e. the culture of competition at all levels; of performance evaluated mostly in financial terms; and of domination, an emotional vehicle of the logic of exclusion, and with it the need to weaken others in order to feel strong.

Emotional cut-off artificially associated with an image of virility for boys and emotional contagion for girls, brings girls—the only ones traditionally permitted to express their emotions—to exist socially very little as differentiated individuals, thus favoring the survival of such a culture. Conversely, with the culture of empathy there can exist an alternative and a choice: to affirm the existence of others (Favre, 2003); this choice would enable the social development of a logic of inclusion. A society in which there are no “socially useless individuals” to eliminate.

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