FACES OF SUICIDAL PATIENTS

Faces of a Doctor and Suicidal Patients interacting

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Abstract

A psychiatrist was filmed interviewing 59 patients who had just made a suicide attempt. Within 2 years, 11 of these patients made another suicide attempt. This group was matched with a similar group of 12 patients who did not reattempt within the 2 years. Samples of film of the facial behavior of the 2 groups of patients and of the doctor were coded, using Ekman and Friesen’s Facial Action Coding System (FACS), with a view to identifying bodily signs that could be associated with reattempt risk. We found a number of such signs, in both the doctor and the patients, which discriminated more than 80%(17) of the 23 interview.

Key words

Suicide attempt risk – facial behavior – conscious / unconscious communication – doctor / patient interactions

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Introduction: How Do Suicidal Patients Behave?

Few forms of behavior have been studied as thoroughly as suicide. Theoretically, they all show how a single type of behavior is simultaneously related to a vast ramification of highly diversified influences (Diekstra, 1996; Garnefski & Diekstra, 1995). Studies of suicides tend to focus either on what occurs within an organism (biochemistry, feelings and intentions) or on the impact of a suicide's behavior (letters, contacting doctors and friends before a suicide attempt). Still more studies do not analyze behavior at all, but the various variables that can be associated with the fact of a suicide attempt, for example psychopathology and economical context. However, a systematic analysis of the actual behavior displayed by suicides (how they smile, walk, and sit) has yet to be systematically analyzed. This study is an attempt to describe some aspects of the behavior displayed in interactions between a psychiatrist and suicide attempters.

There is a persistent rumor among psychotherapists that they can sometimes feel when a patient is hiding a real intention to attempt suicide. Wolk-Wasserman (1987), for example, describes clinical situations where nonverbal cues produced by a patient warned the therapist that he or she is on the verge of a suicide attempt. The signs are often indirect cues, which can be perceived by the therapist in charge, but not by other members of a psychiatric team (for example certain ways of "suddenly arriving at, or repeatedly ringing, the psychiatric department" (p.366)).

In their "Mary" case study, Ekman (1985, p. 16-18) and Friesen looked for signs that could betray a hidden intention to commit suicide. Again the signs they found were difficult to access through conscious attention. The authors mention numerous micro expressions and gestures. Some of theses occurred extremely briefly at a very specific moment. For example: "When telling the doctor how well she was handling her problems Mary sometimes showed a fragment of a shrug - not the whole thing, just part of it". Ekman describes several relevant cues produced by all parts of the body, but the most striking ones were facial.

Ekman's observation illustrates how behaviors associated with suicide can be embedded in many other visible factors, some having a greater impact on the observer's attention (e.g., smiling) than others.

Given clinician's constant difficulties in knowing how to deal efficiently with the indirect signals addressed to them by suicidal patients (Vedrinne & Gaud, 1998), we considered that it could be useful to pursue Ekman's study. Analyzing

Mary's behavior (Ekman & Friesen 1968, 1969)[1] was probably one of the experiences that led Ekman and Friesen to create a systematic means of coding facial behavior, the Facial Action Coding System (FACS). We decided to use this system to isolate more specifically bodily signals that might be associated with the risk of a suicide attempt, in the hope that such motor events could help to understand and predict such a risk.

Method

Subjects

Between November 23, 1992 and, March 1, 1994, using two VHS-S cameras (Panasonic NV-S7EC), we recorded a psychiatrist's interview with 59 patients. These patients had arrived in the emergency ward of Geneva University Hospital[2] just after a suicide attempt. They were all adults aged 20 - 62 years for women (M = 34, SD = 11) and 20 - 65 years for men (M = 36, SD = 111),[3] who spoke enough French to understand and be understood easily. They lived in Geneva or nearby, so that they could be traced later, and had given written consent after being informed of the purpose of the study and the use of films.

One patient was excluded from the study because she died later of an overdose; as we did not know whether she had committed suicide or not, we could not determine whether she was a reattempter. These patients represented some 12% of the suicidal patients received at the hospital during this period (Chevey-Buchs, 1996, p.6).

An experienced woman psychiatrist from the hospital interviewed the patients; she too was filmed.

Determining a ReAttempter and an Attempter Group

To test our hypothesis, a group of ReAttempter patients was formed by looking in the files of Geneva hospitals and psychiatric institutions for the 2 years[4] after each interview. Eleven of the filmed patients were found to have made another suicide attempt. These patients form the 'ReAttempter' group [R] in this study. The next attempt occurred on average 119.18 days after the target attempt (minimum: 33 days, maximum: 417 days, SD = 115.58).

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[1] Mary is described as subject C in the 1968 article, and as subject A in the 1969 article (W. Friesen, personal communication, December 1988).

[2] Medical and Surgical Center, Admissions, Geneva University Hospital.

[3] The legal age for retirement is 65 for men and 62 for women, in Switzerland.

[4] According to Andreoli, Gognalons and Abensur (1989), based on the Geneva psychiatric population they studied, the critical period for most reattempts is 2 years.

An Attempter group was then formed, using some of the remaining films. To obtain groups that were as comparable as possible, we looked for subjects that could be paired with the 11 ReAttempters in respect of sex, age, and number of previous attempts. Twelve patients were found, who form the 'Attempter' group' [A] of this study.

Of the 23 patients included, 6 were males (3 Attempters and 3 ReAttempters) and 17 females. They were born between 1944 and 1972 (M = 35.04 years, minimum = 21 years, maximum = 49 years, SD = 10.00).

Procedure

Each filmed interview lasted about 20 minutes, the interviewer asked a series of standard questions, patients answered as they wished. Topics discussed were the patients' sleep and appetite, their awareness of bodily and breathing sensations, their self-confidence, the suicide attempt which had just occurred, their future suicide intentions, and their evaluation of the care received in the hospital. The psychiatrist's questions were written on a sheet of paper handed to her a few weeks before the first interview so that she could familiarize herself with them. She usually kept this sheet on her lap throughout the interview.

Interviews were filmed in the same room at the hospital. The distance between the chairs was maintained at 1.03 meters. Two VHS-S cameras were used to film the faces of the patient and doctor. Subjects almost faced each other, but not quite. Protagonists must turn slightly to the right to face the other, as shown below (X indicates the location of cameras):

□⇒ 1.03m.
X
X
⇐□

At the beginning of each interview, an assistant doctor focused each camera, and then left the room. Films were made on average 1.4 days after the target attempt (SD = 1.1, maximum = 4, minimum = 0).

Verbal Data

After each interview, the patient and doctor completed a written questionnaire to enable us to evaluate what happened during the interview.

The patient's questionnaire presented to the patients was structured as follows:

1. Thirteen questions on self-esteem and mastery used by Pearlin and Johnson (1977), and Pearlin (1989).[5]
2. Multiple-choice questions about the quality of the interview: (a) Do you think the doctor found this interview positive, negative, positive and negative, or neutral? (b) Did you find the atmosphere of the interview positive,

[5] The French version was translated and validated by M. Gognalons-Nicolet.

negative, or neutral? (c) Is the doctor someone who is unexpressive, slightly expressive, relatively expressive, very expressive, or over-expressive? (d) Was the relationship during this interview easy, difficult, tense, relaxed, distant, empathic, aggressive, or friendly?

The first three patients did not receive the questionnaire. From the seventh patient onwards, patients' anxiety and depression was also evaluated using the 'Hospital Anxiety Depression Scale' (Zigmond & Snaith, 1983).

The doctor was asked not to use any classical diagnostic tool before the interview. The questionnaire (in French) she filled was structured as follows:

1. Multiple choice questions on her spontaneous evaluation of the patient: (a) Do you think that the patient's last suicide attempt was aimed only at communicating, that the patient really wanted to die, or that it was a mixture of both? (b) Is a future suicide attempt improbable, slightly probable, fairly probable, or very probable?
2. Questions on the quality of the interview equivalent to those put to patients.
3. Questions on the doctor's spontaneous impression of the intensity of the patient's anxiety, depression, impulsiveness, and cooperation, using a five-category intensity scale.
4. A description of the patient's medication, psychiatric diagnosis, and previous suicide attempts (how and when).
5. A characterization of her relations with the patient, using three words.

Nonverbal Data

Action units

Facial muscular activity and head and eye orientation were coded using the Facial Action Coding System (FACS) of Ekman and Friesen (1978). We coded 57 muscular units using a .2-second time scale. A five-point intensity scale was used for units for which such a scale is recommended. Otherwise a three point intensity scale was used: A for below minimum requirements (as defined by Ekman and Friesen) but clearly visible to several coders, B for at least minimum requirements, and D for strong activation.

Six coders were involved[6]. All were psychologists qualified as certified FACS coders.

Time samples

Coding facial behavior is a time-consuming task. Following current practice, relatively short samples of two 'topics' were coded:

[6] Véronique Haynal-Reymond, Michael Heller, Christina Leoni-Salem, Christine Lessko, Joëlle Leutwyler, and Nathalie Ruffieux.

- **Suicide topic.** The target question for this sample was whether a patient still wanted to commit suicide (M = 42.175 seconds, SD = 12.855).
- **Care topic.** The target question for this sample was what the patient liked and disliked in the treatment he or she had just received in the hospital (M = 48.308 seconds, SD = 10.351). It was also the last topic in the interview.

For each topic, coding began at the beginning of the silence before the doctor's target question. The sample ended 40 seconds after the beginning of the patient's answer to the doctor's question, or at the end of the discussion if it lasted less time. The experimental plan allows comparisons between doctor and patients (status variable), and suicidal risk differences between ReAttempter and Attempter dyads (risk variable).

Parameters of Bodily Behavior

FACS can be used to code the activation of facial configurations ("expressions") or muscular units. We coded action units individually, taking into account interactions between muscular units in an expression. A program[7] was then used to compute which facial configurations occurred.

Constructed Units

Computer programs written by our laboratory generate 33 constructed units, which group certain aspects of the coded data. For example, when no facial unit was activated, an "empty face" unit was generated [AU00].

The term motor unit adopted here to designate the 57 coded action units and the 33 constructed units used to describe facial behavior, head orientation, and eye orientation.

Measures

Current computer programming techniques tend to describe an object through properties or parameters. Each of these properties is a scale describing an aspect of the object under consideration. For example, a car has several properties, such as shape, color, or type of engine. Each of these properties involves different types of measures. The following 12 properties were used to "measure" motor activity:

1. Duration [DUR]: Time during which a unit was activated, in hundredth of a second [DURabs], and in percentage of the sample's duration [DUR%].

2. Mean intensity [INT]: Sum of the intensities of a unit's activity, divided by the absolute duration during which the unit is activated.

3. Mean activation [ACT]: Sum of intensities divided by duration of the sample.

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[7] The program is based on an earlier program written by Wallace Friesen, who kindly advised us.

4. Occurrence [OCC]: number of times a unit was activated [OCCabs], and number of occurrences per second [OCCperSec].

5. Mobility: Number of times the intensity of an activated unit changed [MOB], and the percentage of sample's duration during which this motion occurred [MOB%].

6. Time spent in immobility [TSI]: the time during which the intensity of an activated unit did not change [TSIabs]and the percentage of the sample's duration during which this immobility lasted [TSI%].

7. Mean duration [DurMean]: average duration of a single activation of a unit.

8. Rhythm of occurrences [OCCry]: average length of time between each occurrence. If there is no occurrence, the value for this measure is the length of the sample. Three occurrences are required to compute a rhythm.

9. Rhythm of mobility [MOBry]: average length of time between each movement. If there is no movement, the value for this measure is the length of the sample. Three movements are required to compute a rhythm.

10. Ordinary least square [OLS]: this statistical device was used to see if activation had a tendency to increase or decrease during the interaction.

12. Mean measures: for some dimensions, the simplest approach was to compute the average of a dimension's time profile (e.g., the mean number of simultaneously activated units). Examples of such measures, mentioned in this article, were:

12a) Mean number of simultaneous movements **[MeanSimulMV]**.

12b) Mean number of simultaneously activated units **[MeanSimulNB]**.

12c) Width of repertoire **[Rep]**: number of action units used in a constructed time sample.

Measures were grouped in 3 activity categories:

1. Activation measures (measures 1 to 4) describe activation in terms of time (duration) and space (intensity).
2. Mobility measures (measures 1 to 8) describe the variability of the intensity of unit during activation.
3. Time structure measures (measures 9 to 12) describe the time pattern of an activation.

Time Sampling

Eight time samples for each topic were constructed, described here with their abbreviation:

1) The silence before the doctor's initial question **[Sil1]**.

2) The doctor's initial question **[491]**.

3) The silence after the doctor's initial question **[Sil2]**.

4) Moments when the doctor supported patients verbally after her initial question **[492]**.

5) All the moments when the doctor spoke **[49]**[8].
6) All the moments when patients spoke **[50]**[9].
7) All the moments when both protagonists were silent **[Sil]**.
8) The whole sample **[All]**.

This procedure generates 24 time samples (8 for the Suicide topic **[S]**, 8 for the Care topic **[C]**, and 8 for both topics considered as a whole **[B]**).

Screening Procedure

The system used to analyze bodily behavior yields a vast amount of information on 23 patients and on a doctor filmed 23 times for a number of seconds. To extract manageable patterns from the data, a programmed screening procedure is required. Procedures and theories on how to manage such data configurations have yet to be created (Heller, 1998).

We used a procedure to **list** phenomena that can be **formally** associated with the patient’s reattempt risk, and to provide some information on how robust the association might be. For each comparison between ReAttempter and Attempter dyads, Belson's criterion (Hugues 1970) was used to compute a threshold efficiency percentage. This percentage takes into account inter-group variance and the number of subjects in each group. It then computes which threshold value generates the strongest difference between the 2 groups, and how many subjects as a percentage are thus differentiated in their association to the variable that characterizes the groups. This criterion is purely descriptive, and corresponds to the type of differentiation a clinician can apply comfortably.

For comparisons between doctor and patients, paired screening and testing is clearly relevant. A paired efficiency percentage was used to screen results of such comparisons. This indicates the percentage of differences between the subjects in each pair that are consistent with the difference between the means characterizing each group.

All comparisons with an efficiency percentage of at least 75% formed a list of strongest observed differences. We also computed a relevant non-parametric tests: a Wilcoxon-Mann-Whitney two tailed test for the threshold efficiency percentage, and a Wilcoxon signed ranks test for the paired efficiency percentage.

Filtering Procedure

A filtering procedure was used to retain only the more robust results.

For some of these measures we computed an absolute value and a relative value (duration, mobility, and occurrence). When - for a given comparison - a significant result was obtained for only one of the two computations, the result was

[8] Moments when the doctor speaks were coded [AU49].
[9] Moments when patients speak were coded [AU50], as recommended in the FACS manual.

eliminated. Furthermore, a strong difference for mean activation measures was kept only if there were also strong differences for duration and intensity.

Distinguishing between percentage duration and absolute duration leads us into issues we do not yet want to consider. One reason for introducing such couples of measures was precisely to test robustness. We intend to generalize these comparisons in future screening procedures.

At this stage, mean duration rhythm and ordinary least square measures were also eliminated, as they are more appropriate for longer time samples.

Grouping Results

The screening procedure still generated a great quantity of results because several measures and time samples were used. Grouping results was pursued through these two axes of analysis.

Grouping results that only differ in respect of time

One comparison between two given groups for a given unit, measured in a given way, can yield a significant result in one or in several time samples. Consider, for example, the results listed in Table 1. All the significant differences selected for the [Head] and [FaceM] variables are listed, which will be discussed latter. These differences are displayed in the efficiency percentage form.

The [Head] variable is computed as activated each time one of the head orientation units is activated. In seven samples, the doctor systematically activates head units with a greater mean intensity [INT] than patients, with an efficiency that varies from 78% to 91%. These seven results are grouped on one line of this table, which forms the <u>time profile</u> of the result.

Taking into account the number of measures involved in a result

One comparison between two groups, for a given unit, can yield significant results for one or several measures. Table 1 contains 55 results obtained from 12 measures, which show that at some moments the doctor clearly displayed more head activity [Head] than patients did. These results are grouped on one last line, which reduces all motor properties to measures of A(ctivation) and M(obility), and an indication of <u>density</u> corresponding to the number of measures involved. “A” precedes “M” because the number of activation measures is at least as big as the number of mobility measures (third column). Thus 55 results become one result: the doctor displayed more [Head] activity than patients, with a density of 12 measures, in 13 of the 24 time samples.

Results Based on Questionnaire Data

The screening procedure was applied to most of the data contained in the questionnaires. As 9 out of 12 patients answered all the questionnaire items, we used a 66% efficiency percentage to screen written data.

Three items only stand out: (a) number of previous suicide attempts [Prev._ATT], (b) the patient's expressed impression that the relationship during the interview was or was not empathic [Pfacile], and (c) the doctor's expressed impression that the relationship was or was not difficult [Ddifficile].

Number of Previous Suicide Attempts

For Kaplan, Sadock, and Grebb (1994, p. 806), "a past suicide attempt is perhaps the best indicator that a patient is at increased risk for suicide". This indication had a threshold efficiency of 74% in our population. The number of previous suicide attempts reported by patients or found in their files was markedly higher among ReAttempter patients (M = 2.5, SD = 1.8) than among Attempter patients (M = 1.2, SD = 1.0). In the ReAttempter group, 7 patients had already made from two to six previous suicide attempts, while in the Attempter group 10 patients had made one or two previous attempt. This difference, however, is not significant using a one-tailed Mann-Whitney test (W = 157).

The Patient's Impression of Ease

For 8 out of 10 Attempter patients the relationship during the interview was easy (M = 0.8, SD = 0.4), while only 4 out of 10 ReAttempter patients (M = 0.4, SD = 0.4) expressed a similar feeling. This difference allowed a correct reattempt risk prediction for 14 of the 20 patients (70%), and was significant with a two-tailed Mann-Whithney test (W = 80, $p <= .03$).

The Doctor's Impression of Difficulty

The doctor had the impression that the interaction was "difficult" with 9 of the 11 ReAttempter patients (M = 0.8, SD = 0.4) and with 4 of the 12 Attempter patients (M = 0.3, SD = 0.5). This difference allowed a correct reattempt risk prediction for 17 of the 23 patients (74%), and was significant with a two-tailed Mann-Whitney test (W = 165, $p <= .02$).

The Doctor's Spontaneous Prediction of Suicide Reattempt Risk

After each interview, the doctor was asked for a spontaneous evaluation of the patient's future suicide risk, using the following scale: 0 (<u>no risk</u>), 1 (<u>slight risk</u>), 2 (<u>moderate risk</u>), and 3 (<u>high risk</u>). The doctor never used the no risk score, used slight risk twice (once wrongly), moderate risk 14 times, and high risk 7 times (twice wrongly). When she did have an opinion, she was wrong 3 times and accurate 6 times.

Discussion on Questionnaire Data

We did not find clear differences between the ReAttempter and Attempter patients. However, two items gave us the impression that some element in the way patients and doctor communicated was sensitive to future suicide attempt risk. This implies that this dimension - or a group of dimensions associated with the notion of ease - could be a dimension on which a therapist should focus when interviewing patients.

The analysis of the doctor's spontaneous prediction of suicide risk, as well as discussions with the doctor, strongly suggest that if there were any systematic behavioral differences between ReAttempter and Attempter dyads, they escaped her conscious attention.

Results from bodily behavior

An initial screening procedure produced 451 clear differences (efficiency of at least 75%), associating a motor unit with a patient's reattempt risk. Filtering procedures reduced these to a more manageable list of 79 clear differences.

Differences between ReAttempter and Attempter Patients

Five motor units differentiated ReAttempter and Attempter patients with at least 80% efficiency. They can be grouped in three main areas: global activity, eye orientation, blinks, and facial activity.

Global activity

The variable for global activity works on the sum of all intensities at a given moment. When we considered the silence just before the doctor's initial question, in both topics, we found that ReAttempter patients tended to display a greater global intensity (efficiency = 83%) and to move more action units simultaneously (efficiency = 78%) than Attempter patients.

A similar general measure for eyes [Eye], head [Head], and face [Face] was also computed. None of these varied strongly in association to a patient's reattempt risk. The difference was therefore not massive, and possibly not striking enough to attract conscious visual attention.

Eye orientation

ReAttempter patients tended to orient their eyes downward [AU64] more than Attempter patients. This was observed in three time samples (all of both samples, all moments when the doctor was speaking, the doctor's two initial questions) with a density of five measures. The strongest result (83% efficiency) was that at certain moments (not all), while the doctor was speaking, ReAttempter patients tended to keep their eyes oriented downwards (<u>time spent in immobility</u> measures) for a longer period than Attempter patients.

The differences were quite clear when we considered both topics lumped together, but lost their strength if we focused on one topic. This observation, as many others, suggest a certain randomness of the time pattern of the differentiating behaviors. Thus, the ReAttempters' increased eye-lowering activity tended to occur while the doctor was asking one of her initial questions, but sometimes in one topic, sometimes in the other. The apparent randomness of the signal is an important aspect of this behavior.

Blinks

ReAttempter patients blinked more than Attempters at one particular point: during the silence after the doctor's initial question on the Care topic. Time spent blinking at this moment enabled us to classify 83% of the patients correctly. The mean efficiency of this phenomenon is slightly weaker (79%) than for eye lowering (82%). Although this difference has a more specific time profile, it is not necessarily easily apprehended by conscious attention. Blinks are so rapid that spontaneously differentiating their duration is almost impossible.

Oral activity

Oral activity (variable [FaceM]) is activated (a) every time one of the muscles that moves the lips without moving the cheeks is activated, and (b) when this activation cannot be explained by speech activity. Five measures showed that ReAttempter patients tended to activate oral units more than Attempters in 9 time samples. As shown in Table 1, the clearest result was that during silences activated oral units were maintained static for a greater mean span of time by ReAttempter patients (see Figure 1). The same result was observed in each topic. During the Suicide topic, ReAttempter patients also displayed this pattern while the doctor was speaking. The power of this phenomenon to distinguish between groups of patients varied from 73% to 91%, and it was sufficiently strong to be at least partially accessible to conscious attention. Nevertheless, it was less clearly displayed (e.g. fewer measures were involved) than the difference also seen shown on the same table, showing more [Head] activity for the doctor than for patients.

The configurations involved were highly varied. They sometimes seemed to be part of an expression of despair or of contempt, while at other times we had the impression of apparently meaningless continuous mobility. Among these oral units, only one varied significantly in function of a patient's reattempt risk: chin raise [AU17] (efficiency = 78%). At least sometimes this unit is clearly involved in expressions of despair and/or sadness, as observed by Ekman (1985) on Mary.

Figure 1. Number of seconds during which patients displayed oral activity during silences in the Care topic:

Figure 1:During silences in the Care topic, one ReAttempter patient displayed no oral activity, while one Attempter patient displayed much oral activity. For the other 21 patients, Attempter patients tended to display oral activation for less than 2 seconds, while ReAttempter patients displayed such activity for 2 seconds or more.

A great variety of behaviors related to conversation rules have been observed (Feyereisen & de Lannoy, 1991, pp. 15-20). Nevertheless, high rates of facial mobility when not speaking remain uncommon (Ellgring, 1998a, pp. 390-391) and could have a strong impact on the speaker (Cosnier, 1988).

Aspects of the Doctor's Behavior Associated with a Patient's Reattempt Risk

Nine motor units differentiated the doctor's behavior in ReAttempter and Attempter dyads with an efficiency of at least 80%. The differences associating the doctor's behavior with a patient's suicide risk are thus more varied but just as strong as those observed in patients[10]. They can be grouped in five categories.

Global activity

The differences displayed by the doctor where some times more complex than those displayed by patients. For example there where moments when the doctor displayed more global activity in Attempter dyads through some motor modalities, and other moments displayed more activation in ReAttempter dyads through other modalities. Such subtleties were never observed on patient:

- During silences in the Suicide topic, when the doctor moved, she tended to move more units simultaneously when interacting with Attempter patients (efficiency = 78%).
- The second trend was a more frequently observed difference (nine time samples), showing through three measures that the doctor displays more intense and complex activation with ReAttempter patients than with Attempters (mean efficiency = 80.5%, varying from 78% to 83%).

Thus both patients and doctor displayed more activity in ReAttempter dyads, but often at different moments. The only moment when patients and doctor clearly displayed more global activity in ReAttempter dyads was the first silence in the Care topic. This apparently crucial moment will be discussed separately.

At various moments the doctor also tended systematically to display more global head and face activity in ReAttempter dyads. Thus the impact of the patient's reattempt risk on global behavior is clearer in the doctor than in patients.

Eye orientation

The [EyeON] variable is activated every time a subject orients eyes in the direction of the other protagonist's face. The [EyeOFF] variable is activated every time a subject clearly orients eyes away from the other protagonist's body. All other positions are considered ambiguous and activate the [EyeAMB] variable.

We found that the doctor oriented her gaze towards the patient's face 69% of the time on average, while patients oriented their gaze towards the doctor's face 43% of the time on average. The doctor oriented her gaze clearly away [EyeOFF]

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[10] These results have already been described from a slightly different perspective elsewhere (Heller & Haynal, 1998; Archinard, Heller, Haynal-Reymond, & Haynal, 1998)

from the patient's body 10% of the time on average, while patients oriented their gaze clearly away from the doctor's body 22% of the time on average.

When the doctor spoke both patients and doctor had a tendency not to look at each other (74% of the doctor's speaking time for the doctor, and 64% of the doctor's speaking time for patients). These [EyeOFF] orientations were sharply reduced while patients were speaking (averages of 3% of the patient's speaking time for the doctor and 26% of the patients speaking time for patients). During the Care topic (see Table 2), the reduction was particularly marked when the doctor was interacting with Attempter patients (there was no [EyeOFF] with 10 patients).

Table 2: Percentage of patients' speaking time doctor clearly oriented her gaze away from the patient's body

Risk:	Reattempters		Attempters	
	M	SD	M	SD
Suicide Topic	4.29	6.28	4.36	4.43
Care Topic	3.30	3.84	0.05***	0.16

***Mann-Whitney = 172, p <= .01 (two tailed), efficiency = 83%.

The silence at the beginning of the Care topic

Before asking the initial question in the Care topic, the doctor tended to look downwards, at the sheet containing the questions she had to ask. This tendency was automatic, even when she knew the questions by heart (for example with the fiftieth patient she interviewed). With ReAttempter patients she tended to orient head and eyes towards the patient **before** she started to speak, while with Attempters she began to speak while still looking at the paper, and then oriented her eyes towards the patient's face. The duration of these silences was much the same in both types of dyads ($\underline{M}$ = 2.35 seconds).

This behavior was composed of 7 motor units associated with head and eye orientation, with a density varying from 2 to 8 ($\underline{M}$ = 4) measures. Orienting eyes towards the patient [AU61] was the densest difference (8 measures were involved), but not the most discriminating (7 measures, witha 78% efficiency). On the other hand, when we counted the number of eye movements on the horizontal plane [EyeRotational], we noticed that with ReAttempter patients the doctor's eyes moved more (discriminative efficiency of 83%). The time pattern and event were fairly clear. Yet it is difficult to observe this on film, even if one is aware of the result. The structure of our data suggests several reasons. In particular, the event is short (less than 3 seconds), and coordinates several motor units (speech, head, and eyes) which are not densely differentiated.

As already mentioned, at this moment, both protagonists showed more general activation [Tot] in ReAttempter dyads. For both protagonists this variable has an average efficiency of 81% in association to a patient's reattempt risk.

Peri-ocular activation

Peri-ocular activation involves all action units around the eyes (AUs 1 to 7, and AU44), with the exception of cheek raise [AU06] when it occurs with lip corner pull [AU12].[11] It consists mostly of a mixture of inner brow raise [AU01], outer brow raise [AU02], and brow lowering [AU04] units. None of these units, taken individually, yielded a robust result. One reason is that there was often a tension rather than a clear intensity, pulling the eyebrows towards each other. In this case, only an electromyography could have reliably told us if the doctor had a tendency to frown almost continuously with some of the ReAttempter patients.[12]

The doctor tended to display more intense peri-ocular activation with ReAttempter patients while the patients were speaking, when either topic was considered (efficiency = 81%). In all other time samples this difference was weaker. This tension of the eyelids often gave us an impression of preoccupation. It is a good example of those slight signals which are difficult to code, but which probably have a strong impact during an interaction.

General configuration of the results

Looking at the general configuration of the results yields additional information that strengthens our impression that they have coherence.

Activity

The data suggest that subjects tended to be more active in ReAttempter than in Attempter dyads. However this difference did not occur all the time, and did not influence all action units. Out of 79 clear differences, 73 showed more activity in ReAttempter than in Attempter dyads. Six results showed more activity in Reattempter dyads then in Attempter dyads. These differences where all generated by the doctor.

Motor Involvement

We have also looked at motor involvement, which considers how much of a person’s body is involved by a given dimension. This involvement can be at least partially assessed by considering the number of motor units, the intensity of the differences, and the number of differences associated to this dimension. Through these variables we can compare the motor involvement of subjects in **status** differences (doctor / patient), and in reattempt **risk**.

[11] The FACS manual stresses that the corner of the eyes can be passively activated by smiles.

[12] Results with low ([A]) intensities are described in Archinard et al. 1998.

Number of motor units involved

Table 3: Number of motor variables involved in differentiating doctor and patients (status), or ReAttempter and Attempter dyads (risk)

	Dependent variables		
Independent variables	*Coded*	*Constructed*	*All*
Status:	10 (30%)	27 (43%)	37 (39%)
Risk:	5 (15%)	14 (22%)	19 (20%)
Total:	12 (36%)	28 (44%)	40 (42%)

Table 3: The dependent variables distinguished here are coded units (FACS action units), constructed motor units, and all motor units (All). The total line is not the sum of the two previous lines, as some units are used in both status and risk differences.

Table 3 shows that 40 (out of 96 possibilities) motor units were involved in our results. Thus, neither status variables nor risk variables mobilized all the motor possibilities available. However, status differences involved nearly twice as many motor units than differences related to suicidal risk.

Strength of results

The 20 strongest differences were all related to patient/doctor comparisons. Their average efficiency varied between 87% and 98%.[13] Some individual results differentiated all patients from the doctor in all samples (100% efficiency). Some differences were significant at the 0.00001 level (two-tailed) with a Wilcoxon signed rank test. Such clear differences were never observed in our suicide risk comparisons. For example the most significant result associated with reattempt risk was at the 0.002 level for the doctor and 0.01 for patients.

Number of results

The final list of filtered and reduced results consisted of 268 motor differences. Of these, 189 (71%) described differences between doctor and patients, 49 (18%) associate the doctor’s behavior with a patient’s reattempt risk, and 30 (11%) differentiated ReAttempter and Attempter patients.

Discussion on the General Configuration of Results

In describing results, we mention several times that the motor events we could associate with reattempt risk are not easy to perceive consciously. We base these remarks chiefly on our experience with our films, before during and after coding. That the doctor did not behave like the patients was clearly perceived by our team, although we did not necessarily agree on which behavioral items produced this difference. We now see that this impression was supported by a great number of different motor phenomena, some of which were marked, while others were subtler.

[13] Most of these results would still be significant using a Bonferroni adjustment, which is never the case for differences associated to suicidal risk.

The doctor’s conscious evaluation was almost random in its accuracy. None of us was able to gain an impression of which patients would make another attempt, even after spending hours looking at their behavior in detail. We now see that only subtle indicators were available, none of which had the strength of some of the behaviors we were able to associate with status after an analysis of the data. The indicators influenced the doctor’s behavior, but not her conscious clinical evaluations.

We thus confirm the observations of Ekman (1985) and Friesen (1968, 1969) and Wolk-Wasserman (1986): if there are associations between suicide reattempt risk and bodily behavior, they undoubtedly have an elusive quality.

The structure of the results also provides us with some clues on what might distinguish conscious and unconscious communication. More conscious forms of communication can be associated to behaviors differentiating doctor and patients through many bodily items, which operate clear distinctions. A communication that seems to operate below the threshold of consciousness requires fewer parts of the body, formatted through less structured temporal patterns.

We therefore suggest that more obvious forms of communication than those we have observed can only occur through an even more massive involvement of bodily behavior, which will consist of both clear (conscious) and more elusive (unconscious) forms of communication.

Emotional Dictionary

Emotional repertoire

Ekman and Friesen created a dictionary (Rosenberg 1998, p.15) associating their list of basic emotions with some facial configurations for which the association could be reliably established. As most facial configurations have several functions, such associations are referred to as an emotional hypothesis. The emotional configurations observed in our samples were: Fear, contempt, disgust, disbelief, sadness, and happiness (felt or unfelt). Analysis showed no significant differences between doctor and patients, or ReAttempter and Attempter dyads, with this set of data. On the other hand, the doctor’s emotional repertoire correlated strongly with the patient’s repertoire, as can be seen in Table 4.

Table 4: number of dyads in which a given emotional facial configuration was observed

Emotional category	Patients	Doctor	Total
Clear association			
Fear	3	0	3
Negative (unspecified)	2	1	3
Disbelief	4	1	5
Sadness	9	3	12
Happiness (felt)	9	9	18
Contempt	10	11	21
Disgust	11	10	21
Happiness (unfelt)	11	17	18
Possible association			
Fear	0	1	1
Contempt	3	0	3
Disgust	2	1	3
Sadness	8	4	12
Anger	14	18	32
No prediction	22	23	45

Pearson's correlation coefficient associating the patient's repertoire and the doctor's repertoire is 0.88. The weakest correlation is observed for sadness.

Because of the dramatic circumstances of the interviews, joyful faces could not be expected. Yet many would probably not expect so much contempt, especially on the doctor's face. However, these findings are compatible with Melanie Klein's (1940) model, or with the observations published by Steimer-Krause, Krause, and Wagner (1998).

Conclusion

Our method of analysis showed that bodily signs of patients who just made a suicide attempt could be associated both with their reattempt risk and with signs observed in the interviewing doctor. Furthermore, we showed that these associations were stronger than the verbal data we collected, or than well-known variables such as the number of previous reattempt risk.

In common with Ekman and Wolk-Wasserman, we observed that signs associated with suicide reattempt risk are often difficult to capture through conscious attention, they tend either to be brief, or to have an apparently random time distribution. It is difficult to attribute a meaning to them. We were able to confirm and clarify these formal aspects of behaviors associated with reattempt risk. We also suggest that much psychiatric know-how is based on similar forms of communication, felt by most sensitive practitioners but difficult to put into words. Understanding such phenomena could thus help us improve and support the clinician's management of human relationships.

Filmed just after a suicide attempt, patients seemed generally expressive. They displayed various forms of sad and aggressive affects on the one hand, and a sense of appreciation that someone was listening to what they have to say on the other hand. This impression is fairly close to Ekman’s (1985) description of Mary. Most of the patients openly admit that they might still want to die.

One finding that merits further attention is the relation between the expression of sadness and suicide. Both Ekman and Wolk-Wasserman report expressions of “despair”, and we saw sadness on the faces 14 of the 23 patients. However, in a pilot study on attempters with major depression symptoms, filmed <u>one week</u> after a suicide attempt, we observed no sadness. It is thus possible that some suicidal patients reorganize themselves by repressing precisely this affect.

We noticed many asymmetric facial configurations, and also contempt. This confirms a finding made on our pilot study (Heller & Haynal 1998). Given the frequency with which contempt is observed (Steimer-Krause, Krause & Wagner, 1998, pp. 374 - 375), we wonder if in the present state of Ekman and Friesen’s dictionary contempt is not too easily proposed. However, there is no doubt that contemptuous expressions are frequently observed. They could explain the substantial number of negative expressions observed in the doctor. Several authors (Fawcett, Leff & Bunney 1969; Wolk-Wasserman, 1986, 1987) have reported that people close to a person who attempts suicide tend to feel and express negative feelings. These could be explained by the mere fact that an attempt occurred. Our films, however, also suggest that such patients have a communicative strategy that directly influences the interlocutor.

Finally our study strengthens results showing the complex nonverbal communicative strategies which structure “medical interaction” (Heath 1986). In this case a doctor seems to adapt her behavior to specific signs of a patient’s suicide risk.

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