BRIEF COMMUNICATIONS

Facial microbehavior and the emotional quality of the therapeutic relationship

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Abstract
The emotional quality of the therapeutic relationship has the highest and most consistent effect sizes on therapeutic outcomes found in meta-analyses on psychotherapeutic processes. In the current study, the facial-emotional (micro-) behaviors of patients and therapists are analyzed to obtain a better understanding of how relationship patterns are established in the beginning of psychotherapies and how they constitute the emotional quality of the relationship. The results provide evidence for the importance of dyadic emotional microprocesses in the psychotherapeutic process. Several significant correlations were found between the individual and more expressed dyadic emotional behavior in the first session and the therapeutic outcome reported at the end of the treatment. In particular, dyadic emotional process patterns, detected with Theme (Magnusson, 1996), correlated negatively with all outcome perspectives.

What constitutes a good or bad psychotherapeutic relationship? This far-reaching question can only be answered satisfactorily if process and interpersonal aspects of the relationship regulation are taken into consideration (Strupp, 1998). See Orlinsky, Grawe, and Parks (1994) for an extensive meta-analysis regarding studies on process and outcome. Although the operationalizations of what is meant by process differ remarkably, one in particular stands out: the well-known relationship between the quality of the therapeutic relationship and the therapeutic outcome (Luborsky et al., 2002; Rosenzweig, 1936). Commonly, a good therapeutic relationship is considered a necessary precondition for successful treatment, but the interpersonal relationship could also be conceptualized as a specific factor of change. Consequently, management of the interpersonal relationship becomes a matter of therapeutic training, and the distinction between technical and interpersonal factors is superfluous (Krause, 1997; Strupp & Binder, 1984). Furthermore, the interpersonal and spontaneous processes between patient and therapist deserve more attention than as merely a necessary precondition for the effectiveness of technical interventions and should be considered the central factor of change themselves (Gelso & Hayes, 1998; Weiss, Sampson, & Mount Zion Psychotherapy Research Group, 1986).

Orlinsky et al. (1994) report the highest and most consistent effect sizes for mutual affect and reciprocal affirmation, which characterize the quality of the therapeutic relationship. However, the procedures used to operationalize and measure aspects of the therapeutic bond are significantly heterogeneous between the summarized studies. This demonstrates the effect force of the therapeutic relationship on therapeutic outcome. Nevertheless, the measures used are so general that it is impossible to make conclusions regarding the therapeutic practice. The categories mutual affect and reciprocal affirmation used by Orlinsky et al. suggest that the studies analyze therapeutic processes and focus especially on emotional processes between patient and therapist. If one examines the original studies, these expectations are not followed through.

For example, Collins et al. (1985) focus on reciprocal affirmation. What they are studying is the extent to which the staff reports affective exchange between patients in the waiting room, which is assessed using one item of the Ward

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Atmosphere Scale (Moos, 1974). In addition, the results on process and outcome variables differ in respect to the perspective from which the ratings are done (Horvath & Luborsky, 1993; Rudolf, 1991). Orlinsky et al.'s (1994) meta-analysis supplies evidence for the importance of the social-emotional side of the therapeutic relationship, but it also points out that further studies are necessary to focus on interpersonal aspects of the emotional processes in therapeutic relationships. In particular, maladaptive relationship patterns of the patient and the therapist and their relationship to one other have to be taken into account to understand the interactive processes that constitute the therapeutic relationship. The necessity is obvious in the case of patients suffering from personality disorders. The establishment of a therapeutic relationship becomes more and more difficult if the patient’s relationship behavior is characterized by hostility, negativism, inflexibility, and antisocial tendencies in addition to abnormal dependence (Strupp, 1998). Moreover, maladaptive relationship patterns are essential parts of the cause of all mental disorders; they perpetuate them and are auspicious starting points for psychotherapeutic changes (Bänninger-Huber & Widmer, 1997).

A series of studies by the Saarbrücken work group (Krause, 1997, 1998; Merten, 2001, 2002; Merten & Krause, 2003) deal with the question of how maladaptive relationship patterns, which are specific for certain types of mental disorders, can be detected in the spontaneous social behavior of patients and their partners. The results can be summarized by four different phenomenon: reduction, anhedonism, adaptation, and congruency. The reduction of the facial expressions of the patients is characterized by a reduction of the expression of joy and an augmentation of one negative emotion: the “Leitaffekt.” Although the overall reduction of facial expression is an indicator of severe mental disorders like schizophrenia (Steimer-Krause, Krause, & Wagner, 1990), the reduction of expressions of joy is a global indicator of nearly all mental disorders. The prominence of one negative emotion can be interpreted as an attempt to solve an intra- or interpersonal conflict that has been reactivated in the current social situation. Merten (1996a) describes the function of the schizophrenic’s Leitaffekt of contempt as an attempt to solve a conflict between wishes for closeness and the fear of being overwhelmed by the emotions of the social partner. Further evidence that Leitaffekt is tied to the reactivation of conflicts is provided by the phenomenon of congruency between facial expression and emotional feeling. In several groups of schizophrenic patients and patients suffering from psychosomatic disorder, the frequency of Leitaffekt correlated negatively with the experience of joy (Merten, 1997a, 1997b). In one study the same phenomenon was found for patients suffering from pain disorder (Merten & Brunnhuber, 2004). They display less joy and more negative emotions than the control group, and the Leitaffekt contempt is positively correlated to the experience of fear and shame and negatively correlated to the experience of joy. In particular, the relationship of Leitaffekt to the experience of fear and shame indicates in general the reactivation of conflicts (fear) and specifically the reactivation of conflicts of self-esteem and autarchy (shame).

A comprehensive result of all these studies was that all healthy partners adapted their behavior to the facial behavior of the patients (phenomenon of adaptation; Krause, 1997; Merten, 2002). In some cases, the healthy partners’ behavior was even more different from that of the control groups than that of the patients (Krause, 1998). Consequently, the modeling of the social implementation of relationship patterns has to be conceptualized as a dyadic model including explicit and implicit representations, wishes, and conflicts of both participants. In the process of implementation, the representations of relationship patterns are creatively adapted and assimilated to ongoing social interactions, and attempts to change these behavior patterns are hampered by their flexibility. As the phenomenon of adaptation demonstrates, it is difficult to resist the stimulative nature of the relationship offers of the patients. The risk to complement the behavior pattern of the patient is highest if the social partner’s own conflictive structure fits that of the patient. However, empathic understanding of a person’s goals and norms can also be used to induce anger, contempt, or other emotions that are part of conflict regulation. Dreher, Mengele, Krause, and Kämmerer (2001) emphasize that a gradual resonance with the patient’s behavior pattern is not necessarily a disadvantage but can help to understand the patient’s social problems. They also, however, demonstrated that at a certain point in treatment the relationship patterns have to be detected and dealt with (Bänninger-Huber, 1996; Krause, 1997; Merten, 1996a, 1996b, 2001).

**Method**

Ten experienced therapists of cognitive–behavioral, psychoanalytic, and client-centered theoretical orientation treated severely disturbed patients in a brief psychotherapy setting of 15 hr during which they were videotaped by two cameras. The therapists...
diagnosed the patients as suffering from severe mental disorders, nine of whom had been treated before without success. Overall, 145 sessions involving six psychodynamic treatments, 3 cognitive-behavioral treatments, and one client-centered treatment were videotaped; of these 119 were analyzed.

Outcome was measured using ratings of success, goal attainment, helpfulness, and contentment with the treatment from both patient and therapist after the 15th session. The ten therapies were ranked according to these outcome measures. The resulting ranks were consistent with changes in the scores of the Freiburger Beschwerdenliste (Fahrenberg, 1975), a list of complaints completed by the patient at the start and end of treatment.

Facial behavior of both protagonists was measured using EMFACS, a technique developed by Friesen and Ekman (1984) based on the Facial Action Coding System (FACS; Ekman & Friesen, 1978). Although FACS comprehensively measures all movements in the face, EMFACS measures only movements that are potentially relevant to affect. Using a dictionary (Friesen, 1988; Wagner, 1986), the measured facial events are interpreted as expressions of the basic emotions of happiness, anger, contempt, disgust, fear, sadness, and surprise or as social smiles. The dictionary also interprets blends and masks from the raw scoring of facial events. Blends are innervations of two of the just-mentioned basic emotions displayed at the same time. Masks are patterns in which a smile is used to cover a negative expression. The interrater reliability varies depending on the level of analysis: whether single action units or emotional categories are considered. In the case of the emotion categories used in the current study, the mean interrater reliability was .89 (Cohen’s k).

EMFACS distinguishes between several types of smiling, especially synchronous Duchenne smiles, which are often prematurely interpreted as indicating a good therapeutic relationship, can be part of maladaptive relationship patterns, and can serve as interactive implementations of defense mechanism (Bänninger-Huber & Widmer, 1999; DeRoten, Gillieron, Despland, & Stigler, 2002). In addition, the negative basis emotions of anger, contempt, disgust, fear, and sadness, and mixtures of them, can be detected and used as indicators of conflicts in the regulation of the self and in the relationship between patient and therapist (Dreher et al., 2001; Krause, 1998; Merten, Ullrich, Anstadt, Krause, & Buchheim, 1997).

To compare facial expressions in psychotherapies with everyday situations, three control groups composed of healthy individuals of differing gender were gathered: male–male, male–female, female–female. The healthy individuals were not acquainted with each other and met for the first time in the laboratory to discuss political problems for 20 min.

We used Magnusson’s (1996) algorithm to detect temporal patterns in the facial expressions of patient and therapist. To identify temporal patterns that occur more often than expected by chance, the algorithm takes into account not only the sequence in which the emotions occur but also the temporal distances between them. Such patterns are called emotional process patterns. If they include facial expression of both protagonists, they are called dyadic; if they include only facial expression of one protagonist, they are called individual. A very common pattern is composed of two Duchenne smiles of different people. This kind of smiling was first described by Duchenne de Bologne (Darwin, 2000) and consists of raising the corners of the mouth and raising the infraorbital triangle to the left and right of the nose. Negative emotions were also often elements of the detected temporal patterns.

Hypotheses

Hypothesis 1: Based on the results labeled as phenomenon of reduction and adaptation, the frequencies of facial expressions are reduced in the case of the patient and the therapist in comparison to healthy individuals. The most distinct differences are expected for synchronous Duchenne smiles.

Hypothesis 2: The most frequent basic emotion of the patient displayed—the Leitaffekt—in the first therapy session is related to therapeutic outcome. The more distinct it is, the worse the outcome will be.

Hypothesis 3: Hypothesis 2 is also true in respect to the Leitaffekt of the therapist. Based on Dreher et al. (2001), it can be assumed that the function of the therapist’s negative emotions is ambiguous. Negative or positive correlations of their frequency with therapeutic outcome are expected.

Hypothesis 4: The proportion of positive and negative emotions of the patient and the therapist is related to the therapeutic outcome. The dyadic Leitaffekt subdivided in three categories represents this proportion.

Hypothesis 5: (a) The worst outcome is expected if patient and therapist have a positive Leitaffekt. (It is more of an indicator for an everyday conversation than a therapeutic conversation.) (b) The best outcome is expected if the Leitaffekt of one compen-
Hypothesis 6: The extent of a successful dyadic reactivation of the patient’s behavior pattern in the first psychotherapeutic session is measured as the frequency of dyadic emotional process patterns and is negatively correlated to therapeutic outcome.

Results

Hypothesis 1: Psychotherapeutic situation and everyday conversation

If one compares facial-emotional behavior in everyday conversations and psychotherapeutic situations, one yields the following results: The overall facial emotionality of patients and therapist is reduced compared with that of healthy individuals in everyday interactions (Table I, $\Sigma 1–7$). Joy and disgust are displayed less by patients and therapists, whereas fear and surprise are more often shown by patients in the psychotherapeutic situation. The therapists also show more surprise than participants in everyday interactions. Patients and therapists both display less contempt than healthy individuals in everyday interactions, but patients show contempt twice as frequently as therapists.

In comparison to everyday conversations, synchronous Duchenne smiles are significantly reduced in psychotherapeutic interactions ($M = .079$, $SD = .71$, $N = 116$ sessions). Healthy individuals in everyday conversations show simultaneous Duchenne smiles three times more frequently than patients and therapists ($M = 2.32$, $SD = 1.91$, $Z = -4.67$, $p < .001$).

<table>
<thead>
<tr>
<th>Basic emotions</th>
<th>Joy</th>
<th>Disgust</th>
<th>Contempt</th>
<th>Sadness</th>
<th>Anger</th>
<th>Surprise</th>
<th>Fear</th>
<th>$\Sigma 1–7$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychotherapy$^a$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients $M$</td>
<td>5.60***</td>
<td>6.31*</td>
<td>2.39***</td>
<td>0.49***</td>
<td>1.16**</td>
<td>1.27***</td>
<td>0.51***</td>
<td>17.74***</td>
</tr>
<tr>
<td>$SD$</td>
<td>4.85</td>
<td>11.51</td>
<td>3.88</td>
<td>0.79</td>
<td>1.17</td>
<td>2.31</td>
<td>0.78</td>
<td>13.59</td>
</tr>
<tr>
<td>Therapists $M$</td>
<td>6.07***</td>
<td>1.44***</td>
<td>1.00***</td>
<td>0.13***</td>
<td>1.09*</td>
<td>0.57***</td>
<td>0.09c</td>
<td>10.39***</td>
</tr>
<tr>
<td>$SD$</td>
<td>5.55</td>
<td>1.46</td>
<td>1.26</td>
<td>0.32</td>
<td>1.17</td>
<td>0.88</td>
<td>0.32</td>
<td>6.47</td>
</tr>
</tbody>
</table>

Control participants ($n = 60$)

| $M$  | 13.88 | 6.43 | 5.29 | 2.19 | 0.98 | 0.28 | 0.09 | 29.14 |
| $SD$ | 9.50  | 7.10 | 7.10 | 3.39 | 1.63 | 0.70 | 0.37 | 15.32 |

Note. The error probabilities given in the rows “Patients” and “Therapists” refer to the comparisons with the control group. Mann-Whitney U Test.

$^aN = 119$ sessions. $^bN = 30$ conversations. $^cNot significant.$

$p < .05$. $**p < .01$. $***p < .001$. 

Hypotheses 2 and 3: The leitaffekt of patient and therapist and the therapeutic outcome

Neither the valence nor the frequency of the patient’s Leitaffekt correlates with the therapeutic outcome. The proportion of the therapist’s Leitaffekt on all basic emotions negatively correlates with the therapeutic outcome rated by the therapist (Table II). The affective valence of the Leitaffekt was not taken into account; it is only considered how distinct the therapist displayed one specific basic emotion in the first therapy session. The more one specific basic emotion was displayed, the worse the therapeutic outcome was.

Hypothesis 4: Therapist’s negative emotions and the therapeutic outcome

The sum of the negative emotions anger, contempt, and disgust of the therapist correlated positively with the therapeutic outcome (see Table II).

Hypothesis 5: The dyadic leitaffekt and the therapeutic outcome

The functions of the negative emotions of the therapist become more apparent if one considers the proportion to the patient’s emotions. The dyadic Leitaffekt correlates with the therapeutic outcome, as assumed in Hypothesis 5.

In particular, if the therapist compensates the patient’s facial expressions of joy (Duchenne smiles) with negative emotions, the therapeutic outcome was better. The proportion of therapist’s negative emotions to patient’s positive emotions correlates positively with all three perspectives of the therapeutic outcome rating. When the therapist displayed a
reciprocal Leitaffekt, the therapeutic outcome was worse.

**Hypothesis 6: Emotional process patterns and the therapeutic outcome**

The application of the Magnusson algorithm to the patient’s and therapist’s facial expressions reveals many dyadic emotional process patterns that correlate with the therapeutic outcome (Table III). The frequency of dyadic emotional process patterns in the first session correlates positively with all three outcome measures. The dyadic pattern of synchronous Duchenne smiles occurs in nearly all therapy sessions, but this pattern also indicates that positive reciprocity correlates negatively with the therapeutic outcome regardless of who starts them (Table III). If the number of synchronous Duchenne smiles exceeds a certain threshold, they seem to hamper therapeutic processes more than they further them. The synchronous Duchenne smiles started by the therapist had an inverse U-shaped relation to therapeutic outcome, which did not reach the 5% significance level.

**Discussion**

These results provide evidence for the importance of dyadic emotional microprocesses in the psychotherapeutic process and show differences between the psychotherapeutic situation and everyday conversation. Dyadic emotional process patterns observed in the first session are good predictors for the therapeutic outcome at the end of the psychotherapy, independent of the perspective when the ratings were done. The hypothesis about the differences between the psychotherapeutic situation and the everyday situation were confirmed. However, the reduction of the patients’ facial expressions is due not only to the effect of the situation but to the general reduction phenomenon reported early in this article. Exceptions are the emotions of anger, fear, and surprise on the part of patients and surprise on the part of therapists. The augmented emotions fear and surprise can be interpreted as indicating the information processing of new and unexpected contents and as parts of change processes in mental representations like schema accommodation. The increase of fear in the patient’s facial expressions signals the reactivation of specific conflicts in the current situation. The patient’s facial expressions of anger are signs of blocked goals, which can be understood in different ways. The anger can indicate a missing compliance with the proposals of the therapist as to how to change the patient’s behavior. Alternatively, the augmentation of anger could also further change processes if it is related to persons who restrict the patient’s wishes for autonomy.

The reduction of therapists’ contempt expresses their professional esteem for their patients, although the patients sometimes reacted with anger to the therapists’ proposals and disdained their assistance (e.g., asking for simple solutions to their problems). Also in some cases, the induction of contempt in the therapist is a part of the patient’s maladaptive relationship pattern.

The reduction of the facial expression of sadness indicates a stable relationship between patient and therapist.

**Table II. Therapists’ negative emotions, dyadic leitaffekt, and therapeutic outcome.**

<table>
<thead>
<tr>
<th>Facial expressions</th>
<th>Therapist</th>
<th>Patient</th>
<th>Therapist–patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative frequency of therapist’s Leitaffekt</td>
<td>−.63**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative emotions therapist (anger, contempt, disgust)</td>
<td>.81***</td>
<td>.64*</td>
<td>.76**</td>
</tr>
<tr>
<td>Negative emotions therapist/joy patient</td>
<td></td>
<td>.55*</td>
<td></td>
</tr>
<tr>
<td>Dyadic Leitaffekt</td>
<td></td>
<td>−.69**</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Spearman rank correlations, $N=10$, $^*p < .10$. $^**p < .05$. $^***p < .01$.

**Table III. Dyadic emotional process patterns, synchronous duchenne smiles, and therapeutic outcome.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Therapist</th>
<th>Patient</th>
<th>Therapist–patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyadic emotional process patterns</td>
<td>−.58*</td>
<td>−.81**</td>
<td>−.75**</td>
</tr>
<tr>
<td>Synchronous Duchenne smiles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient starts</td>
<td>−.63*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Therapist starts</td>
<td>−.55*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Spearman rank correlations, $N=10$. $^*p < .10$. $^**p < .05$. $^***p < .01$.
therapist in comparison to the everyday conversation in which people meet for the first time and have not yet established a stable relationship. As research has demonstrated, the facial expressions of sadness serve as relationship regulating signals if one of the partners evaluates the actual perceived closeness as being not sufficient (Merten, 1997a). In cases in which the facial expressions of sadness were augmented (mostly involving patients), they were shown in the context of conflicts in the relationship and in the context of anger and fear and served to compensate the perceived weakness of the bond to the therapist. So facial expressions of anger, fear, and sadness occurred together and served as regulating signals in the context of conflicts about separation (anger) and attachment (sadness, joy), where the facial expressions of fear signal the anticipated or real loss of attachment to the therapist (Morschitzky, 1998). A single case illustrating this function of anger, fear, and sadness was described in Merten et al. (1996).

The analysis of the (micromomentary) facial expressions of emotions demonstrates that the behavior patterns of patients are established already in the first session, that they bring forth changes in the behavior of therapists, and that they bias psychotherapeutic processes relevant for the whole course of the treatment, because the degree to which they occur is related to the therapeutic outcome at the end. These patterns can only be registered with the aid of the analysis of the spontaneous and mostly unconscious facial microbehavior and are not amenable to ratings about the quality of the therapeutic relationship, because neither patient nor therapist were able, in the first session, to formulate the conflicts appearing in their social behavior.

Before discussing the details of the correlations between facial expressions and therapeutic outcome, one can state that only the dyadic measures consistently correlated with all three outcome measures. Hypothesis 2 could not be confirmed; the patients’ Leitaffekt alone was not significant to the therapeutic outcome. However, the distinctness of the therapists’ Leitaffekt correlated with each therapist’s own outcome rating. So therapists had some implicit knowledge about the processes that resulted in worse outcome situations, which is reflected in the first session in an excess of one emotion.

The ambiguity of the negative emotions assumed in Hypothesis 4 could be clarified. The negative emotions of the therapists were essential parts of therapeutic understanding. However, in conjunction with the results concerning Hypothesis 5 and 6, they should be compensating elements to excesses of joy on the side of the patients, and they must not be parts of persisting maladaptive emotional process patterns. Their positive function is to obtain an emotionally deeper understanding of the patient’s problem and to signal to the patient that the therapist grasps the problems mentally and emotionally.

As mentioned, the most consistent correlations are those between dyadic variables of facial expression and the therapeutic outcome, the dyadic Leitaffekt, and the dyadic emotional process patterns. It becomes obvious that the contribution of the therapist to the quality of the therapeutic relationship is much higher than it is assumed in studies based on ratings (Krupnick et al., 1996). At least in respect to the therapeutic outcome and the facial expressions, the opposite is true; the contributions of the therapists are essential for the prediction of the outcome. The (not significant) inverse U-shaped correlation between synchronous Duchenne smiles and therapeutic outcome is mentioned because it is consistent with the results of DeRoten et al. (2002). In the groups studied by DeRoten in which the relationship was assessed as being not as good, there were either many episodes of synchronous smiling or only a few. The synchronous Duchenne smiles not only serve the function of enhancing the quality of the therapeutic bond but they can also be indicators of defense processes (Bänninger-Huber & Widmer, 1999) if they occur too frequently.

The results presented should be interpreted under the restriction that the group was very heterogeneous in respect to patient diagnoses. In addition, it was found that the dyadic gender of the therapeutic dyadic had an effect on the quality of the facial expressions (Merten, 2001). In a further study in progress, only dyads composed of female patients suffering from panic disorder with and without agoraphobia and male therapists were recruited. The correlations between dyadic Leitaffekt and the therapeutic outcome could be replicated in a sample of 20 patients by Beutel, Leithold, and Rasting (2002).

To develop a technique of the management of the relationship regulation described in this study, future research must scrutinize the way patients succeed in establishing their behavior patterns and how therapists react to them. The results presented give some hints, which are discussed in more detail and demonstrated in single cases in Merten (2001). The general importance of the results presented for clinical practice is the fact that scholars as well as experienced therapists should focus more on training of the perception of the spontaneous emotional behaviors of their patients and of the therapists themselves. The therapists also send spontaneous emotional messages that they contribute essentially to the quality of the therapeutic relationship and to
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Emotionnelle de la relation thérapeutique


tici. Nel suddetto studio vengono analizzati i (micro-) comportamenti facciali-emozionali dei pazienti e dei terapeuti al fine di capire meglio in che modo i modelli relazionali creino all’inizio delle psicoterapie e in che modo vadano a costituire la qualità emotazionale della relazione. I risultati forniscono una prova dell’importanza dei micro-processi emotionali duali nel processo psicoterapeutico. Sono state trovate diverse correlazioni significative fra il comportamento emotazionale duale individuale e maggiormente espresso nella prima sessione ed il risultato terapeutico riportato al termine della terapia. In particolare, i pattern dei processi emotazionali diadici ritrovati con THEME sono corretti negativamente con tutte le prospettive dell’outcome.