Nonverbal Leakage and Clues to Deception †

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IN THE LAST FEW YEARS there has been a resurgence of interest in facial expression and body movement, both in research relevant to psychotherapy,[1] and in the development of psychotherapeutic techniques which emphasize this mode of behavior.[2] Most of the research has shown that the kind of information which can be gleaned from the patient's words—information about affects, attitudes, interpersonal styles, psychodynamics—can also be derived from his concomitant nonverbal behavior. Yet, if body movements and facial expressions were only redundant with verbal behavior, there would be little need for the therapist to carefully attend to it, or the psychotherapy researcher to bear the burden of recording and analyzing visual records. Two years ago we argued (1968a) that the central problem for those investigators interested in the application of their work to psychotherapy research or practice was to provide evidence of how nonverbal behavior can provide information which differs from that provided by words. We suggested that demographic variables, changes in ego states, situational variables, and message content would all be relevant in determining when actions speak louder than words. In this article we will explore only one of these variables, the interaction situation, and will consider how within deception interactions differences in neuroanatomy and cultural influences combine to produce specific types of body movements and facial expressions which escape efforts to deceive and emerge as *leakage* or *deception clues*.

The proposal that nonverbal behavior may escape efforts to deceive, may evade self-censoring, or may betray dissimulation is by no means new. Darwin wrote:

Some actions ordinarily associated through habit with certain states of mind may be partially repressed through the will, and in such cases the muscles which are least under the separate control of the will are the most liable still to act, causing movements which we recognize as expressive. In certain other cases the checking of one habitual movement requires other slight movements; and these are likewise expressive. [pp. 48-49]

Darwin did not, however, clearly specify which movements are susceptible to control of the "will," and which escape such control or are themselves a product of the control.

Freud was persuaded of the impor-

tance of nonverbal behavior when he wrote:

He that has eyes to see and ears to hear may convince himself that no mortal can keep a secret. If his lips are silent, he chatters with his finger-tips; betrayal oozes out of him at every pore. [p. 94]

But Freud was less concerned with nonverbal behavior than with the intricacies of verbal behavior, and such forms of verbal leakage as slips of the tongue and dreams.

Goffman is the contemporary writer whose general framework is most relevant to deception and nonverbal behavior. Social interactions are all in a sense deceptive; the participants are engaged in a dramatic performance to manage impressions that are given off.

The legitimate performances of everyday life are not "acted" or "put on" in the sense that the performer knows in advance just what he is going to do, and does this solely because of the effect it is likely to have. The expressions it is felt that he is giving off will be especially "inaccessible" to him. But as in the case of less legitimate performers, the incapacity of the ordinary individual to formulate in advance the movements of his eyes and body does not mean that he will not express himself through these devices in a way that is dramatized and pre-formed in his repertoire of acts. In short, we all act better than we know how. [pp. 73-74]

Our view of deception situations differs from Goffman's in emphasis; we will isolate specific types of interactions which differ from other performances in terms of the focus upon withholding information and dissimulating. Goffman has also described how nonverbal actions may inadvertently distract from the performance. He considers unmeant gestures as problems in that the audience may treat them seriously, questioning the honesty of a performance because of accidental expressive cues. We will emphasize the other side of the coin, how certain nonverbal acts should be treated as important evidence that the performance is deceptive and the information being provided is false.

We will distinguish two types of de-

ception, and then consider three dimensions which distinguish deceptive situations from other forms of social interaction. We will then postulate differences in the sending capacity of the face, hands, and feet based largely upon neuroanatomical considerations, and discuss how these sending differences combine with sociocultural variables to bring about differences among face, hands and feet in internal and external feedback. These differences in feedback form the basis for our predictions about the types of nonverbal activities which provide leakage and deception clues. Finally, we will present evidence from our study of psychiatric interviews which illustrates our general hypotheses.

DEFINITIONS

We will consider two forms of deception: alter-deception, where ego,[3] the deceiver, conceals information from the other interactant, alter; and self-deception, where ego is the object of his own deception, concealing information from himself. Alter is not deceived if he perceives either deception clues or leakage. Deception clues tip him off that deception is in progress but do not reveal the concealed information; the betrayal of that withheld information we call leakage. Alter may become aware of deception clues or leakage regardless of whether ego is aware of their occurrence or of alter's cognizance of them. During alter-deception, if ego realizes alter is on to him, he may give up his deception; or he may continue it, since explicit acknowledgment of engaging in deception may be more embarrassing than maintaining a deception tacitly discovered. During self-deception, it is likely that alter may be aware of deception clues and leakage of which ego is oblivious; if ego becomes aware of his own deception clues he may have an uncanny feeling

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[3] The term ego is used to refer to the party of principal interest in a dyad, not in the psychoanalytic sense.

that something is amiss, or that he has some conflicting feelings; presumably ego does not become aware of his own leakage during self-deception because to learn the information he has concealed from himself would produce severe anxiety.

Ego plans his behavior during alter-deception and is usually quite aware of what he wishes to conceal from alter. The information withheld might refer to ego's feelings and attitudes toward alter, or toward some other person or object; or it might be about some past activity or future plan of his own, or of alter's, or of some third party of interest to alter. Ego has two choices, if he is to succeed in his deception: inhibit or simulate. Most often he will do both. Simply inhibiting, cutting off communication entirely, is the safest way to prevent leakage, but it usually is a giveaway to alter that something is amiss. Instead ego will attempt to maintain the communicative flow, pretending that nothing is being concealed while he carefully and selectively omits certain messages.

Simulation comes about for three reasons. The first reason, just described, is that the gaps left by omitting specific messages must be filled if the gaps are not to become conspicuous deception clues. A second motive for simulation is to maintain a barrier against the breakthrough of inhibited behavior. When there is considerable pressure behind the matters being concealed the only way to prevent their leakage is by simulating antithetical feelings. A neutral face probably will not succeed in masking uproarious laughter, particularly if there is continuing mirthful provocation; the trace of the smile, the quiver in the corners of the lips, can best be withheld over time by setting the jaw, biting the lip, or compressing the lips.

A third reason for simulation is more intrinsic to the structure of the social setting and the goal of the deception. Most deceptive situations not only dictate the need to conceal one item of information but also require the substitution of a false message. It is not sufficient, for example, for the job applicant to inhibit signs of nervousness or inexperience, or for the hospitalized depressive patient to inhibit signs of melancholia; the goal of the deception requires that to gain employment the applicant simulate cool confidence, that to gain release from the hospital the patient simulate feelings of optimism, well-being and insight. The extent of simulating is thus related to how extensive the lie may be, how many gaps are created by omission, how much motivational force is associated with the information concealed, and how extensive the requirements are for substituted false messages in order to achieve the goal of the deception. Later we will describe how simulations may be improperly performed because of defects in internal feedback about certain types of nonverbal behavior, and how such imperfect nonverbal simulations are major forms of deception clues.

While alter-deception involves a dyad in which one member deceives the other, self-deception is a more individual phenomenon, where the presence of the other person is not necessarily relevant to the deception. Alter is not the primary target; instead the purpose of the deception is to conceal information from the self-aware part of the self. There is a division within the individual such that one part of the self can inhibit and conceal information from the more conscious or self-aware part of the individual. Such a formulation of individual behavior is, of course, completely consistent with the psychoanalytic theory of defense mechanisms. The term "blocking" would be applied to those self-deceptive situations in which ego realizes that he has concealed something from himself, or that he can't remember something, or that he can't describe or be sure of how he feels. The terms "repression" or "dissociation" would refer to a more complete manifestation of self-deception, where ego is totally unaware that part of his

self has engaged in concealing information from the self-aware part. And the situation of ambivalence has similarities, which we will discuss later, in both alter- and self-deception.

Simulation typically accompanies the inhibition of information in self-deception. In order for ego to maintain the required image of himself and the desired social face to others, it is usually not sufficient that he conceal certain information; he must adopt as his own, feelings and attitudes which help disconfirm the matters being withheld. The person who dissociates anger not only may need to omit all such feelings, but also may need to appear to himself and others as altruistic and generous. The simulated behavior during self-deception differs from the simulation during alter-deception; it is less explicitly managed and the false message is actually felt, but it is not all that is felt. The simulation and its degree of genuineness is much like the feelings involved in the psychoanalytic defense mechanism of reaction-formation, and this is far more actually experienced than the simulations of alter-deception.

DIMENSIONS OF DECEPTIVE SITUATIONS

At least three aspects of deceptive interactions need to be considered in order to distinguish deceptions from other forms of social interaction, and also to distinguish among types of deceptive encounters. For both ego and alter we must specify the *saliency* of deception, the adoption of deceptive and detective *roles*, and whether there is *collaboration* or *antagonism* between ego and alter about the discovery or maintenance of deception.

"Saliency" refers to the degree to which deception is an explicit focus of conscious concern by ego and/or alter; it is in large part determined by the social definition of the situation, although variations in past experience or deviations in personality[4] also influence

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[4] Paranoid persons might be considered to typically enter interactions with salient expectations that they will be deceived.

ence saliency. The encounter of a jury (alter) with a murderer (ego), on trial for his life and testifying to his innocence, is an example of symmetrical saliency. Both ego and alter are quite aware of the likelihood that ego may be engaged in deception; both are highly aware that ego's honesty is in question and that they must respectively conceal or discover deception. Bargaining, between labor and management or between unfriendly world powers, is another example of symmetrical saliency. Both parties distrust their counterpart, both recognize that the opponent may attempt to deceive about his state of satisfaction with any set of proposed outcomes or about threatened actions if bargains are not made or kept. In these situations both ego and alter are vigilant about the possibility of deception.

There are, of course, asymmetrical saliency situations. If ego is an applicant for a job, and is trying to conceal his past criminal or mental hospital record, the employment interview may be a situation where deception is not expected and has low saliency for the interviewer (alter) but high saliency for the applicant (ego).

In all of these examples, saliency means not only that ego has focused upon attempting to deceive (or alter upon detecting deception), but that in addition the stakes are high, ego wishes to succeed in his deception, and alter wishes to succeed in his detection (if the situation is also salient for him). But there are situations where deception is salient in terms of the focus on concealment or dissimulation, by either ego or alter, but little is at stake, and success is not important. Deception within games, at least for those who don't take their games too seriously, would be one such example; the telling of "white lies" is another. In our terms, deception is not salient in situations in which the stakes are low. We shall consider only interactions where there is a focus upon deception for at least one participant, and where there

are important issues at stake which motivate at least one of the participants to care about success. Later we will briefly discuss how leakage may occur because the deceiver, even though motivated to deceive, feels guilty and wishes to be caught in his lie.

The second dimension of the deceptive situation is the number of *roles* adopted by each participant. Both parties may adopt the roles of deceiver and detector. Or, one party may be cast as deceiver, the other as detector. In the example of murderer and jury, the murderer is primarily a deceiver and the jury a detector. To the extent that the jury conceals its evaluation of the prisoner, it is also a deceiver, and inasmuch as the prisoner wishes to determine the jury's belief in his story, he must become detector as well as deceiver. Still, the situation dictates that one be the primary deceiver and the other the primary detector.

Bargaining is a situation where the roles adopted by ego and alter are symmetrical; both parties equally tend to emphasize deceiver and detector roles and are cognizant that both roles are salient for each. The job interview situation described earlier shows asymmetry; only the applicant has a salient concern with deception, although, like the prisoner, he may wish to learn alter's view of him. While the interviewer is primarily focused on evaluating, and detection has low saliency for him, his evaluating may be unwitting detection, and he is seen by the applicant as a detector. Similarly, low or nil saliency can result in a situation in which both parties are deceivers and neither is a detector. When saliency is high for one party and low for the other, there may be a deceiver and no detector, or a detector and no deceiver.

Collaboration or *antagonism* refers to the implicit or explicit pact between alter and ego about the discovery or maintenance of deception. In the jury situation there is antagonism; ego, the prisoner, wishes to maintain deception, but realizes that alter, the jury, wishes

to uncover or discover deception. The same is true for the bargaining example. An example of collaboration about maintenance of deception would be a situation in which two students, after finishing a difficult examination, quiz each other about their reactions and fears, with tacit agreement not to discuss their anxieties; they thus collaborate in maintaining the deceptive behavior each displays in acting "cool." The philandering husband and the wife who doesn't wish to confront his infidelities collaborate to maintain the deception.

There can also be collaboration to *discover* deception rather than to maintain it. Psychotherapy is probably such a situation, in that the patient agrees at least in part to work with the therapist in uncovering his own alter-or self-deceptive maneuvers. In terms of the other dimensions of deceptive situations, psychotherapy is characterized by role asymmetry, with patient probably in both deceiver and detector roles, and the therapist more in the role of detector. And, in psychotherapy, the saliency of deception will fluctuate, perhaps being maximal for both participants at periods of therapeutic crisis or intense resistance. We do not claim that psychotherapy is best conceived of as a deceptive situation, but rather that there are points in psychotherapy when deception occurs and our formulation would be applicable.

Convincing deceptive performances should be most difficult under the following conditions: saliency for both ego and alter; role asymmetry, with ego in the role of both deceiver and detector, and alter only in the role of detector and thus able to concentrate upon ego's behavior without concern about monitoring or dissimulating his own performance; and, antagonism, with ego wishing to maintain and alter wishing to uncover deception.

The easiest deceptive situation for ego would be the following: asymmetry in saliency, with ego focused upon deceiving but the probability of being

deceived having low saliency for alter; role asymmetry, with ego focused primarily upon deceiving and not concerned with detecting, and alter attempting both to detect and deceive; and some collaboration to maintain the deception, such that alter would be embarrassed to admit discovery of ego's deception. The encounter of prisoner and jury is an example of the most difficult deceptive situation. An easy deceptive situation may be illustrated by the following. A teacher is telling his student that he was unable to read the student's paper the previous night because of a visit of out-of-town relatives, while in actual fact the teacher was wildly drunk at a jazz spot, and observed by the student; while the teacher is himself engaged in deception, the student is amused or has contempt for the teacher, but does not want to reveal these feelings or his knowledge of the teacher's lie; the student, as ego, has an easy time in his deception. Another situation where deception is easy is when ego engages in alter-deception, withholding information which alter is also withholding from himself in a self-deceptive maneuver; for example, ego tells a very unattractive alter, "You're a beautiful gal," and the gal in question has deceived herself about her own appearance and therefore will collaborate with her deceiver to maintain the deception.

In terms of these dimensions of deceptive situations, Goffman has been most interested in interactions where there is moderate to low saliency about deception and collaboration to maintain the deception. We will emphasize in our discussion situations where the deception is highly salient, at least for ego; where there is antagonism, such that ego wishes to maintain and alter wishes to uncover the deception; and where there tends to be role asymmetry, such that ego is primarily deceiver, and alter is primarily detector.

In such deceptive interactions ego must be skilled in both inhibition and simulation maneuvers. In order either

to prevent his own action or to act falsely in terms of his real feelings or experience, ego needs to know what he can do with his body; he needs to be aware of his own actions through both internal and external feedback; and he needs knowledge of how to program his actions. We will suggest that the internal feedback available varies for the face, hands, and feet.[5] These differences in internal feedback arise from differences in sending capacities and differences in external feedback usually given these body areas.

SENDING CAPACITY, EXTERNAL FEED-
BACK, AND INTERNAL FEEDBACK

The *sending capacity* of a part of the body can be measured by three indexes: average transmission time, number of discriminable stimulus patterns which can be emitted, and visibility. In these terms the face is the best sender, the feet/legs the worst. The face has the shortest potential transmission time; most "macro" facial expressions, those that can be easily seen and readily labeled in terms of emotion, last less than a second, often about half a second. "Micro" facial expressions are even shorter, by definition their duration is so short that they are at the threshold of recognition unless slow motion projection is utilized.[6] The facial musculature allows for a great number of discriminable

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[5] We have excluded posture from our discussion, as we do not think it is a major source of either leakage or deception clues. Posture, while standing or sitting, and gait are paradoxical forms of nonverbal behavior. They are, we believe, highly determined by basic characterological aspects of the individual and, in particular, by identification models and yet are easily modified by training or exercise, such as is given in certain vocations. Conversational postures are in our terms *regulators*, or, as Scheflen has described them, *markers;* they serve to set the stage for the interaction, defining the degree of formality, task orientation, etc. Shifts in posture note changes in topic, affect, or role during conversations. Conversational postural positions are quite standardized in terms of the social setting and the roles of the participants, and easily assumed. We thus believe that simulation of posture is quite easy, and that postural cues rarely provide leakage or deception clues, if ego cares at all about deceiving.

[6] This distinction between macro and micro expressions will be discussed later. While Haggard

stimuli patterns,[7] far more than are provided by legs/feet. The face has the greatest visibility; it is covered only by sunglasses, make-up or hair, except in cultures that frequently use masks or veils. It is difficult to hide the face without being obvious about concealment; there are no inhibition maneuvers for the face equivalent to putting the hands in the pocket or sitting upon them. A frozen, immobile poker face is more noticeable than are interlocked fingers or tensely held feet.

The feet and legs are in almost all respects the worst nonverbal senders. Their transmission time is slow, far slower than that for the face or hands. The number of discriminable stimulus patterns which can be emitted is also limited. When a person is standing, his foot movements are restricted by the requirements of staying erect; even when seated, he is limited to what foot and leg movements can occur without his falling or sliding out of the chair. Feet/legs are not very visible; the toes are usually covered by socks and shoes, much of the leg by pants or a skirt (the popularity of mini-skirts makes for some change in visibility, although inhibitions about looking may still apply). In Western society at least, furniture is usually arranged so that the feet or legs cannot be easily viewed, and people become uncomfortable during conversations if they are totally exposed without the screen of a desk, table, or speaker's podium. Even when furniture does not directly interfere with the gaze, seating distance usually does. While talking, people usually sit

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and Isaacs first described micro facial expressions as being actually not detectable at normal viewing, our own research and the evidence from the neurophysiology of visual perception strongly suggest that micro expressions that are as short as one motion-picture frame (1/50 of a second) can be perceived. That these micro expressions are not usually seen must depend upon their being embedded in other expressions which distract attention, their infrequency, or some learned perceptual habit of ignoring fast facial expressions.

[7] In developing a coding scheme for describing the relevant cue properties of 7 primary affect states, we have had to deal with over 20 separate facial items.

or stand too close for inspection of the feet/legs area to take place without a noticeable look downwards.

Anatomically, hands are intermediate between face and feet/legs, and this is also true of their sending capacity. Although small hand movements may be as brief as most macro facial expressions, most hand activity, whether it be in space or touching the body, requires a longer duration for performance. The independent movements of the ten fingers, the different spatial patterns which may be described, the accelerations, the choice of areas of the body to contact, and the actions which may occur at the apex of the movement provide the hands with many more discriminable stimulus patterns than the legs/feet, perhaps as many as the face. Hands are much more visible than the legs/feet, rarely covered by clothing or obscured by furniture, but, unlike the face, they can be easily hidden.

External feedback from alter closely parallels these differences in sending capacity. External feedback can be defined as behavior by alter which ego is likely to perceive as reactive to his own nonverbal behavior. The most obvious external feedback would be alter's verbal comment on ego's nonverbal behavior; alter's gaze direction may also provide external feedback to ego, at least in terms of alter's interest in a nonverbal act. There can be other forms of external feedback, such as imitative behavior or other changes in verbal or nonverbal behavior which are responsive to ego's nonverbal behavior, but ego usually will not associate them with his own nonverbal behavior. The term "external feedback" does not refer to what alter perceives, but more narrowly to those aspects of alter's behavior which explicitly inform ego what alter has perceived and evaluated.

The most external feedback is provided for the face; people are most willing to comment verbally on and hold the person responsible for what is shown facially. There is less external feedback directed at the hands, and

very little to the feet/legs, which not only are rarely the subject of verbal comment but also are rarely the conspicuous target of eye gaze. The differences in sending capacity among body areas may partially explain these differences in external feedback: People look most at the best sender, the face. But there are other reasons for looking at and commenting on facial behavior. As the input site for seeing, hearing, smelling, tasting, breathing, and ingesting, and the output site for words, most other sounds, and lipreading cues, it commands attention. In Western culture there is almost a fetish about facial attractiveness; at least part of the self is identified with the face; there is belief in the ability to read character and intelligence from facial cues; and the most idiosyncratic personal sector of the individual is thought to reside in or be reflected in the face. The face is the primary site for the display of affects, and in particular for eye-contacts, which are important in regulating the relationship between ego and alter.

There are, however, limits to the attention that can be directed toward the face. The face cannot be watched as continually as the voice can supposedly be listened to. If alter looks too long he suggests intimacy or a power struggle; if he looks too little he suggests disinterest, dishonesty, or suspicion. In Western society a dyadic conversation usually occurs in a seating position where the rest positions of the faces are not directly vis-à-vis. People sit at slight angles to each other rather than directly face to face, particularly if no table is interposed. Looking at the other person requires an act, moving the eyes or the head from center, and the act ends by returning to the resting position where it is easy not to look or not to be looked at. Seating a dyad in direct face-to-face confrontation can produce the same discomfort as removing all screens blocking the view of the body below the waist. Such seating positions connote interrogation and severe role inequality.

Alter may give external feedback regarding ego's hands if those hands are moving in space, particularly if they are enacting what we have called "illustrator" movements, motions which in some fashion illustrate what is being verbalized. But there is a taboo about being caught looking at hand acts when they involve contact with the body, particularly if hands contact a body orifice or genital area. It is not that people are polite and constrained and don't do these things their parents would scold about; but people are polite observers. When the rules of Emily Post are broken and people rub, pick, or massage their noses, ears, anus, or crotch, they believe that others won't look, and this is generally true. Rudeness seems to reside as much in watching such behavior as in emitting it. An interesting sidelight on this phenomenon is found in interactions between drivers of automobiles. Many people act in their cars as if they had the privacy of their bathrooms, and a convention has developed of not looking through the open window or clear glass at such bathroom behavior, so that the "embarrassed" party is not the groomer but the one caught watching the grooming.

Even less external feedback is given to the feet/legs than to the hands. Alter might directly comment on a facial expression, describing or mimicking it and asking ego what it means, and might similarly comment on a hand movement in space. But just as it would be extraordinary for alter to ask about ego's nose picking, ear scratching, or genital rubbing, so it would be unusual for him to comment on leg squeezing or foot arching. These differences in what alter will comment upon are paralleled in any looking behavior which occurs in a fashion easily noted by ego.

Let us repeat that in this discussion of external feedback we have not meant to claim that alter will not see hand movements or leg/foot movements; he may, just as he may actually see facial

behaviors on which he does not provide feedback. Instead, our use of the term "external feedback" rather than "visual focus" was to limit our concern to those behaviors of alter which conspicuously provide information to ego that ego's nonverbal behavior is the subject of alter's scrutiny and evaluation. In such terms, the face receives more commentary than the hands or the legs/feet.

Internal feedback, our conscious awareness of what we are doing and our ability to recall, repeat, or specifically enact a planned sequence of motor behavior, parallels both sending capacity and external feedback in terms of the differences among face, hands, and feet. People have the greatest internal feedback about their face, next most about their hands and least about their legs and feet. Why might this be so? As we have explained, the face, as the best sender, receives the most external feedback; such feedback may teach ego to pay more attention to his face, amplifying and focusing upon whatever internal feedback cues are available. Conversely, ego may learn that people pay little attention to his legs/feet, and therefore conclude that he can afford to be less vigilant about what he does in this body area.

Further, our verbal vocabulary is most extensive for facial behaviors, next most for hands, and least for legs/feet. While it is reasonable to presume that the verbal labels develop because of the greater sending capacity of the face and the need for a simple means of communicating about facial messages, the existence of labels amplifies any already existing differences, in that cognitive processes of retrieval, sorting, and recognition of logical or temporal relationships are aided by the availability of a simple means of referring to or tagging nonverbal events.

Another consideration is that just as people are held responsible for what they show facially, so they take more responsibility for what is shown in their face. Most people identify at least some part of their self with their face, but do so to a much lesser degree with other areas of the body.

A last consideration relates to the neuroanatomical properties of the face, hands and legs/feet. Internal feedback may be more developed and accentuated for the face than for hands and legs/feet because of the relative rapidity of facial muscular movements, and because of the possible neural linkage of the facial muscles as affect programs, as suggested by Silvan Tomkins. Ego may have to monitor facial behaviors very closely because they are such a fast system, capable of being ennervated by involuntary as well as voluntary events.

Our hypotheses about the nonverbal sources for leakage and deception clues can be derived from what has been outlined about sending capacity, internal feedback, and external feedback. Ego will not expend much effort inhibiting or dissimulating with areas of the body largely ignored by alter. Equally important, ego cannot inhibit or dissimulate actions in areas of the body about which he has learned to disregard internal feedback or in which he receives little internal feedback. If an action is to be withheld, that area of the body must be closely monitored; if a false message is to be sent, then ego must be able to retrieve easily information about actions he has customarily employed to express the particular feeling he wishes to convey misleadingly at this moment. Before specifying hypotheses, we must digress to consider two types of nonverbal behavior which are of central importance as leakage and deception clues: affect displays and adaptors.[8]

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[8] We have distinguished among five types of nonverbal behaviors—emblems, illustrators, regulators, affect displays, and adaptors—in terms of their origins, coding and usage (Ekman and Friesen, 1968b). Emblems are those actions which are consciously intended to be communicative signals, where there is high agreement among members of a subculture or culture about the meaning of the signal—e.g., the thumb-to-index-finger circle, with other fingers extended is an emblem for O.K. Illustrators are those actions which are intimately related to the verbal

The face is the major site of the *affect displays*. We and others[9] have accumulated evidence which indicates distinctive movements of the facial muscles for each of some seven primary affect states: happiness, anger, fear, surprise, sadness, disgust, interest. Most affect displays, at least those shown in public places, and perhaps all those shown during even the most intimate interaction, are managed or controlled by display rules. Display rules determine whether an affect display is intensified, de-intensified, neutralized, or masked with a covering affect. The particular display rule which operates upon a particular affect is determined by culture, well mapped in terms of social situations, role, age, sex, and status of the person emitting the display. Display rules may also be idiosyncratic within a culture, shaped by peculiarities of the family interaction.

Micro affect displays result from the operation of any of the display rules; they are expressions which are so brief that they are barely perceptible to the untrained observer. Micro displays may be fragments of a squelched, neutralized, or masked display. Micro displays may also show the full muscular movements associated with a macro affect display, but may be greatly reduced in time. We have found[10] that such micro displays when shown in slow motion do convey emotional information to observers, and that expert clinical observers can see micro displays and read the emotional information without the benefit of slow motion projection.

If the micro display results from squelching and that squelching is fast enough, the affect may be completely obscured, and the display may provide deception clues rather than leakage. If there is a brief but relatively complete display of affect, then the micro display may provide leakage. Such micro displays are often followed by or covered by simulated, antithetical, macro affect displays, and the untrained observer will usually miss or minimize micro displays.

Eye-contacts (which we consider part of the affect display of interest) which deviate in duration or frequency from the norm for a given social interaction can provide important deception clues, stemming from ego's guilt regarding deception or fear of being uncovered, or, conversely, his attempt to simulate confidence and candor.

Adaptors develop from movements which are first learned by a person in early life as part of his adaptive efforts to satisfy self or bodily needs, to perform bodily actions, to manage emotions, to develop or maintain prototypic interpersonal contacts, and to learn instrumental activities. The confusing aspect of adaptors is that while they were first learned as part of a total adaptive pattern in which the goal of the activity was obvious, they are emitted by the adult, particularly during social conversations, in a form in which only a fragment of the original adaptive behavior can be seen. These fragments or reductions of previously learned adaptive acts are maintained by habit. When originally learned, the adaptive behavior was associated with certain drives, with certain felt emotions, with expectancies, with types of interpersonal interaction, or with a given setting. When the adaptor appears in the adult, it is a response to something in the current environment that triggers the old habit; something occurs which is relevant to the drive, emotion, relationship, or setting originally associated with the learning of the adaptive pattern. But the original total adaptive activity is rarely carried through to completion; and, when seen without knowledge of the origin of the

discourse, illustrating what is being said by emphasis, pointing, pictorial enactment, rhythmic movements, or kinetic actions. Regulators are those nonverbal actions which have as their sole function the management of the conversational flow or exchange. While leakage and deception clues can be manifest in emblems, illustrators, or regulators, we believe that they are less important for this discussion than the affect displays and adaptors.
[9] See Ekman, Sorenson, and Friesen; and Izard.
[10] Paul Ekman, Grant Progress Report, Oct., 1968.

activity, it may appear as random or
noisy behavior. By this definition,
adaptors emitted by the adult are habi-
tual, are not intended to communicate,
and occur usually without awareness.
We can distinguish among self-
adaptors, alter-adaptors, and object-
adaptors.

Self-adaptors are based on behavior
learned to master or manage a variety
of problems and needs: to facilitate or
block sensory input; to perform inges-
tive and excretive functions; to engage
in autoerotic activity; to groom,
cleanse or modify the attractiveness of
the face and body; and to facilitate or
block sound-making and speech. Alter-
directed adaptors originate in move-
ments learned in early, perhaps proto-
typic, interpersonal contacts. They in-
clude movements necessary to giving
and taking, attacking or defending, es-
tablishing closeness and intimacy or
withdrawal and flight, and establishing
sexual contact. Object-adaptors include
movements originally learned in the
performance of some instrumental
task: driving a car, smoking, wielding
a tool or weapon, and so forth.

Since the adaptors are habitually
based, and primarily involve the body
rather than the face, they are less like-
ly than facial acts to be inhibited, and
they are rarely employed as part of a
simulation. Ego receives less external
feedback and maintains less internal
feedback about the adaptors. Often, ego
will be uncomfortable about engaging
in deception, and adaptors will emerge
as deception clues which betray this
discomfort and stand out as discordant
with the primary dissimulated mes-
sage. For example, ego may scratch or
pick at himself to punish himself for
deceiving, or he may tend to hide his
face with his hands, an adaptor for
concealing embarrassment, or he may
engage in abortive flight movements
with his legs/feet. The relevance of the
adaptors and micro affect displays will
emerge in the general discussion of the
differences among the face, hands, and
feet/legs.

LEAKAGE AND DECEPTION CLUES

Earlier we traced how sending ca-
pacity and external and internal feed-
back are greater for the face than for
the hands and feet. From this we hy-
pothesized that ego will attempt much
less inhibition or dissimulation in the
areas of the hands and feet. Thus, the
face is likely to be the major nonverbal
liar, maximally redundant with the
verbal behavior during deception, sub-
ject to lies of both omission and com-
mission. The chief exceptions are micro
facial displays, which can serve as leak-
age or deception clues. Because the face
is such a fast sending system, even
during alter-deception, there may be
affect displays which begin to emerge
before ego is fully aware of them and
can squelch them. Other forms of de-
ception clues in the face are imperfect-
ly performed simulations of affect.
These might include performances of
too long duration, with too extensive a
scope to the expression, or without the
usual blend of affects. Examples are the
smile that lasts too long, the frown that
is too severe, the look of fear that is not
sufficiently blended with surprise.

The full affect reduced time micro
displays may well be those which ego is
not aware of, while the squelched micro
displays may be those which ego senses
and interrupts in midperformance. If
that is so, we would expect the time
reduced full affect displays to be more
prevalent in self-deception than in al-
ter-deception, and the reverse to be
true of the micro, squelched affect dis-
plays.

In a sense the face is equipped to lie
the most and leak the most, and thus
can be a very confusing source of in-
formation during deception. Generally,
ego can get away with and best perpet-
uate deception through his face. Al-
though he must monitor quickly and
work continually to inhibit this fast
responsive system, he has most
awareness of his facial displays and is
usually well practiced in the display
rules for modulating facial affects. In

contrast to either the hands or legs/feet, the face is the major site for lies of commission, for simulated messages; ego has the internal feedback to retrieve information about what facial muscles to move to create the appearance of an affect which he does not feel at present. The success of facial deception depends upon alter's ignoring or disregarding the leakage through micro displays and the rough edges on the simulated displays. The evidence cited earlier suggests that most persons do disregard such important forms of leakage and deception clues, and one would expect the usual observer of the face typically to be misled. One would expect the keen observer, on the other hand, to receive contradictory information from facial cues: simulated messages, micro leakage of information which contradicts the simulations, and deception clues of squelched displays and improperly performed simulations.

The hands are easier to inhibit than the face; as mentioned earlier, they can be hidden from view without the hiding itself becoming salient as a deception clue. But the hands, unlike the face, are not fakers; most people will not use their hands to dissimulate. The hands commit lies of omission but not of commission. Major forms of leakage in the hands are the adaptors, particularly the self-adaptors. While facially smiling and pleasant, ego may be tearing at a fingernail, digging into his cheek, protectively holding his knees, and so forth. Self-adaptors can also serve as deception clues, betraying discomfort about the deception. Alter-adaptors in the hands and legs/feet can provide leakage or deception clues—for example, a fist can leak interest in attack, a beseeching hand movement can leak fear which is otherwise disavowed. Object-adaptors can provide deception clues, such as the restless tapping of a cigarette; or leakage, such as the displacement of withheld anger into the snapping of a pencil.

The legs/feet, which have a limited repertoire of information, are a prima-

ry source of both leakage and deception clues.[11] Like the hands, they are relatively easy to inhibit, although not as totally as the hands, and the legs/feet are employed even less than the hands in dissimulations. Leakage in the legs/feet could include aggressive foot kicks, flirtatious leg displays, autoerotic or soothing leg squeezing, abortive restless flight movements. Deception clues can be seen in tense leg positions, frequent shift of leg posture, and in restless or repetitive leg and foot acts.

Another form of deception clues in both the hands and legs/feet results from ego's neglecting to perform simulations which should accompany the verbal and facial simulations. The lack of the usually associated self- and alter-adaptors, the lack of the usual illustrative hand movements, can create the impression in alter that ego does not really mean what he says; ego just doesn't look natural. But, generally, these areas of the body are not watched too closely by alter, and deficiencies can pass.

To summarize, the availability of leakage and deception clues reverses the pattern described for differences in sending capacity, internal feedback, and external feedback. The worst sender, the legs/feet, is also the least responded to and the least within ego's awareness, and thus a good source for leakage and deception clues. The best sender, the face, is most closely watched by alter, most carefully monitored by ego, most subject to inhibition and dissimulation, and thus the most confusing source of information during deception; apart from micro expres-

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[11] Overall posture, like the legs/feet, is limited in the repertoire of information which can be conveyed. But it differs from legs/feet in terms of being highly visible, and, importantly for our discussion, there are well-established standards of posture for given social situations, while such standards are not nearly as well formulated for legs/feet movements independent of total posture. Thus, it would be unlikely that ego would show inappropriate posture as a form of leakage or deception clues; he knows too well how he should sit or stand in a given situation; for the same reason, he can simulate the postural position he may need to convey a false message.

sions, it is not a major source of leakage and deception clues. The hands are intermediate on both counts, as a source of leakage and deception clues, and in regard to sending capacity and internal and external feedback.

ILLUSTRATIVE EXPERIMENTS

We have conducted some preliminary experiments employing records of natural occurrences of deception. Sound motion-picture films had already been collected of 120 brief interviews with 40 female psychiatric inpatients at different points in their hospitalization. The films of each patient, the interviewer's notes about her, the ward records, and information obtained after her discharge were examined in order to isolate interviews in which the patient had probably been engaging in either self- or alter-deception. We could be certain that deception occurred and could specify the concealed information on only three interviews.

The basic design of the experiments was to show a film of one of the interviews silently to one of two different groups of naive observers, one group viewing only the face and head, the other viewing the body from the neck down. The observers were not told they were seeing a psychiatric patient; the film was identified as a record of a conversation. After viewing the film, both groups of observers described their impressions by checking words from Gough's Adjective Check List, 300 words descriptive of attitudes, traits, affects, manners. To test hypotheses about the source of leakage of withheld information, the information conveyed by head/face cues was contrasted with information conveyed by body cues.

An Example of Alter-deception

Patient A was admitted to the hospital with depressed affect, angry outbursts, screaming, threats of suicide; there was disagreement about whether the diagnosis was agitated depression or schizophrenia. She was given amitriptyline hydrochloride and psychothera-

py. Within two and a half weeks she had begun an attempt to manage her affect expression, and to inhibit the display of her anxiety, anger, and dysphoria. Films were taken on the first day of hospitalization, in the middle of hospitalization and shortly before discharge. At the middle of hospitalization it appeared that Miss A was engaged in alter-deception, attempting to conceal information about how upset she still actually was, and simulating optimism, control of affect, and feelings of well-being. Our evidence that such deception occurred during this interview included the interviewer's impression and the ward psychiatrist's impression; the patient's behavior at the conclusion of the interview when she broke down, cried and admitted she did not feel as well as she had earlier claimed; and posthospitalization discussions of this film with the patient.

Hypothesis: The observers who view the face/head cues, more than those who view the body cues, will miss concealed information about depression and agitation, and instead will pick up the simulated message about well-being. While we anticipated that there would be both micro leakage and deception clues in the face, we expected that naive observers viewing the head/face at normal projection speed would fail to pick up these occurrences and would instead be more misled by the patient's deception than those who viewed the body.

The head/face version of the film was viewed by 18 observers; 28 observers viewed the body version of the film. In data analysis a word from the Adjective Check List was considered a "head" message if it was checked by $\geq 50\%$ of the observers who saw the head, $\leq 49\%$ of the observers who saw the body, and if there was $\geq 20\%$ difference in the head and body percentages. The same criterion was used for determining a "body" message. A word was considered to be a message for both head and body if it was checked by $\geq 50\%$ of both head and body ob-

Table 1

ALTER-DECEPTION: PATIENT A, WITHHOLDING INFORMATION ABOUT DEPRESSION AND AGITATION, SIMULATING HEALTH AND WELL-BEING

Head Messages	% Head	% Body	Body Messages	% Head	% Body	Head & Body Messages	% Head	% Body
Sensitive	83	36	Tense	44	82	Anxious	89	100
Friendly	50	14	Excitable	22	79	Emotional	89	82
Cooperative	50	14	High strung	39	75	Confused	72	82
Self-punishing	50	02	Fearful	33	68	Defensive	72	71
			Hurried	0	61	Worrying	50	68
			Changeable	39	61	Dissatisfied	56	57
			Awkward	33	61	Despondent	56	50
			Complaining	11	54			
			Touchy	28	54			
			Affected	33	54			
			Restless	06	50			
			Impulsive	17	50			
			Impatient	0	50			
			Rigid	17	50			

servers and if there was ≤19% difference in the head and body percentages.

Table 1 shows the head messages, body messages, and messages common to both cue areas. Our hypothesis is supported only in part. While the head messages contained the expected dissimulated information and the body messages conveyed the expected concealed information, the messages conveyed by *both* head and body contained some of what we expected to be concealed (anxious, confused, worrying, etc.). We believe that this was due to the fact that near the end of the film the patient ceased her efforts to deceive and cried openly, thus providing previously concealed information in her face.

Self-deception: Example 1

The same patient, Miss A, was in a hypomanic state shortly before discharge. At this time she engaged in a great deal of girlish, seductive, flirtatious behavior, showing coquettish interest in the males she encountered. On the basis of her verbal behavior in the interview, the impressions of the interviewer, and posthospitalization discussions with the patient, who within a few months had a recurrence of her depression, the flirtatious, immature

seductiveness seemed quite outside of her awareness.

Hypothesis: The observers who view only the head/face will tend to see only the appearance of a healthy, cooperative patient, while those who view the body will perceive the coquettish, excited, seductive picture.

The head/face version was seen by 31 observers; 23 observers saw the body version of the film. Table 2 shows the results of the comparative analysis of head and body messages. These results provide some support for the hypothesis; the expected differences in head and body messages appear to have been conveyed, and the messages conveyed by both head and body do not contain the information which we expected to be concealed.

In other research on this film we found many legs/feet movements which we considered to be flirtatious, autoerotic, and appropriate to a woman much younger than the patient. We showed just the legs/feet movements of this film to another group of observers, and when we compared their impressions with those of persons who had seen just the head/face, the legs/feet messages generally supported our impression. We also found that the observers of the legs/

Table 2

SELF-DECEPTION: PATIENT A, WITHHOLDING INFORMATION ABOUT SEDUCTIVE, IMMATURE, IMPULSIVE BEHAVIOR, AND SIMULATING COOPERATIVENESS

Head Messages	% Head	% Body	Body Messages	% Head	% Body	Head & Body Messages	% Head	% Body
Talkative	68	30	Confused	48	83	Emotional	65	83
Alert	65	39	Awkward	47	78	Active	74	74
Cheerful	61	30	Excitable	42	78	Changeable	68	74
Cooperative	59	35	Restless	32	74	Nervous	65	74
Serious	52	22	Impulsive	39	65	Defensive	52	61
			High strung	29	65			
			Feminine	32	65			

feet guessed that the patient was in her teens, while those who saw the face/head guessed her to be in her thirties. This difference in age perception was not found when comparing observers of head and observers of feet for the same patient's admission-to-the-hospital film.

Self-deception: Example 2

Patient B was admitted to the hospital with hallucinations, delusions, and ideas of reference, with a diagnosis of acute schizophrenia. She was treated with fluphenazine hydrochloride and nine days after admission the acute signs of the psychosis began to fade and the patient began to rationalize and deny her acute disorder. A film was taken at this time. Her interviewer, the attending psychiatrist, and the patient herself in later discussion substantiated the impression that despite her claims that she was no longer disturbed, she was actually still experiencing considerable anxiety, confusion, and delusions during the filming session.

Hypothesis: Observers who view the face/head cues more than those who view the body cues will miss concealed information about anxiety, confusion and delusions, and instead will pick up the simulated message of well-being and health.

The head/face version of the film was viewed by 27 observers; 28 observers viewed the body version of the film. Table 3 shows the results of the com-

Table 3

SELF-DECEPTION: PATIENT B, WITHHOLDING INFORMATION ABOUT CONFUSION, ANXIETY, AND DELUSIONS, SIMULATING WELL-BEING AND HEALTH

Head Messages	% Head	% Body	Body Messages	% Head	% Body	Head & Body Messages	% Head	% Body
Cooperative	85	36	Tense	18	68	Active	59	53
Friendly	81	25	Nervous	44	64	Changeable	55	53
Cheerful	70	11	Defensive	26	57	Alert	63	50
Sensitive	63	39	Confused	33	53			
Affectionate	59	28	Cautious	30	53			
Appreciative	59	18	Worrying	30	50			
Pleasant	59	11						
Warm	59	18						
Kind	55	32						
Talkative	55	21						
Considerate	52	25						
Good-natured	52	25						
Honest	52	28						

parative analysis of head and body messages.

These results provide the best illustration of our formulation of the source of leakage and deception clues.

These studies show a difference in the information conveyed by the head as compared to the hands/legs/feet, which is in the direction predicted by our formulation of leakage and deception clues. They do not, however, directly test our theory; there is no comparison of the information conveyed by nonverbal and verbal behavior, no comparison of the micro and macro facial displays, and no determination of whether the specific hand and legs/feet acts which we described as sources of leakage and deception clues were actually responsible for conveying the messages listed in the tables. Further, they suffer from an uncertainty, which probably can never be fully resolved in studying naturalistic occurrences of deception, about whether we were correct in our assessment of what information was withheld and what was dissimulated. To remedy some of these deficiencies, our work in progress is employing an experimental, laboratory, dyadic interaction in which ego is immersed in a positive or negative affect-inducing experience and instructed to engage in alter-deception by simulating positive affect when experiencing negative affect, and vice versa.

Before closing, some mention should be made of the major exceptions to what we have presented. There are some people who do not leak very much, if at all; they are professional, convincing nonverbal liars—for example, the professional dancer or actor, the skilled courtroom lawyer, the shrewd diplomat or negotiator, and the successful (sometimes psychopathically so) used-car salesman. An explanation of why there is less nonverbal leakage with the dancer and actor can be inferred from the earlier discussion of internal and external feedback. The dancer and actor have focused their attention on the use of their body as a

communicative instrument; they have heightened their internal awareness of their nonverbal behavior and engaged in continual training which involves focused external feedback from coach, director, audience, about the effectiveness of their simulations. Thus, they are exceptions to our formulation because they have what most people lack, the feedback necessary to monitor, tune, and thus disguise through the nonverbal channel. But, why would the diplomat or car salesman or con man be a convincing nonverbal liar, providing little leakage and few deception clues? Do they simply become more skilled through practice, or are there personality variables which influence the selection of such persons and which also are related to skill in nonverbal dissimulating? Or might it be that in some social settings there is little guilt or ambivalence about deceiving? If so, to the extent that leakage is motivated by an attempt to be caught, this would explain why such people do not leak.[12] Certainly some of the behavior which leads to the discovery of deception may be attributed to a deliberate wish to be caught, but this should be distinguished from the leakage and deception clues which result when the subject is motivated to deceive but secondarily becomes ashamed, guilty, or anxious, and unwittingly gives away his deception.

If one considers why a person does not succeed in deception, one finds at least three explanations and they are not mutually exclusive. The simplest one is that the person has a conscious wish to be caught or not to succeed in deception. In such cases, one would not expect the concealed information to be manifest in the micro displays, or adaptors, but instead to be conveyed by macro facial displays, postural cues, and other more easily and usually attended to forms of nonverbal behavior.

This situation, where the person consciously wants to deceive but wants to

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[12] This explanation was suggested by Erving Goffman.

be caught, is quite similar to that of the ambivalent person who is aware of both sides of his ambivalence. Here, the part of the message the person wishes to take least responsibility for will probably be channeled into nonverbal behavior. The consciously ambivalent person can have his cake and eat it too, by communicating the less acceptable feelings through his nonverbal behavior; he conveys his message but in a form where alter is less likely to explicitly respond, and in a manner which will allow him to deny responsibility for it, or even to deny its occurrence. But, like the person who wants to be caught, the consciously ambivalent person should not be considered as wanting to conceal information, but as wanting to convey one of his messages in such a way that he will be less accountable for it. While such messages may tend to be manifest in nonverbal behavior, they will not be shown in the types of activities we have described as leakage (i.e., micro displays), for these would not be likely to get the messages across. Instead, macro facial displays, postural cues, hand in space movements, and other forms of nonverbal activity which customarily receive attention from alter will be employed. These are the forms of nonverbal behavior which we have not previously discussed as sources of leakage and deception clues, because ego customarily has good internal and external feedback about them and can successfully utilize such nonverbal behaviors to dissimulate. In conscious ambivalence the person does not have the same problem of concealing information which he has in alter-deception; instead he conveys contradictory information, with the verbal and nonverbal channels dividing in some part the more and less socially acceptable parts of the ambivalence.

The second explanation of why a person does not succeed in deception is that he may feel secondary guilt, shame, and/or anxiety about engaging in the deception or about the possibility of being discovered, and these feelings add to his problem of concealing information. Here we assume that the person does not wish to be caught; he may not even be aware of his guilt, shame, and/or anxiety, but he must withhold both the original concealed information and also those affective reactions about deception which, if manifest, would serve at least as deception clues. The manifestations of leakage should be as we have predicted, although their content may pertain either to the secondary affective reaction about deception or to the original concealed information.

The last explanation of why a person fails in deception is the one provided in the main argument of the paper. Ego cannot monitor and disguise those forms of nonverbal behavior to which he has customarily not attended and about which he does not maintain feedback; and, if he has learned that most people do not usually watch certain types of activities, then he does not bother trying to inhibit or dissimulate in regard to those activities.

While we have just distinguished conscious ambivalence from deception, ambivalence in which one feeling or message is not conscious fits our description of self-deception. The manifestations of the unconscious feeling or thought in the ambivalence presumably appear in the forms we have described as leakage and deception clues.

There are a number of applications of this description of leakage and deception clues. People could be trained to become better nonverbal liars, utilizing videotape feedback to enhance their internal feedback, and focusing external feedback to help them plug up leaks and better eliminate deception clues; the most benevolent use of such procedures would be in the dramatic arts. Our description of deceptive situations should help begin to specify those types of interactions or points during an interaction when ego and alter might best attend to nonverbal behavior as a source of information which

will be least repetitive with the verbal behavior. Moreover, we have suggested specific types of behaviors for which the diagnostician or clinician should look; these may be useful either in evaluation or as a focus in bringing problems to the attention of the patient. Training could be developed which would improve recognition of micro expressions as well as alert the observer to particular nonverbal acts. Knowledge of nonverbal leakage and deception clues could also perhaps be utilized in an attempt to develop lie detection procedures which rely upon nonverbal behavior.

It is interesting to note that our formulation of the origin of leakage and deception clues contains a suggestion that the phenomenon may considerably change—and may even partially disappear—as attention is brought to

bear upon it. If the reader believes what has been said, then when he is engaged as ego in deceptive situations he may monitor his own behavior more closely, and be more alert about what to inhibit and which body areas to scrutinize; paradoxically, the leakage through hands and legs/feet should be relatively easy to eliminate once a person is aware of it. In the role of alter he should also be more attentive to the areas of leakage in others. If we are correct, such an increase in both internal and external feedback may start to diminish the information revealed through nonverbal leakage and clues to deception.

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