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DISTURBANCES OF COMMUNICATION IN PERSONS WITH TRAUMATIC BRAIN INJURY

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SUMMARY

Background:

The present study was undertaken to examine the communicative problems faced by non-aphasic patients with traumatic brain injury (TBI), with particular attention to the complex interactions between the psychological processes taking place in the minds of patients and the social transactions involved in the communicative act. Some theoretical background is provided.

Case studies:

Five examples are given, illustrating how TBI patients exhibit pathologies of communication, even when their linguistic competence, as normally understood, seems to be largely intact. Qualitative methods of analysis are applied, including a simplified version of conversation analysis.

Conclusions:

Aphasia is not the only, or even the most important cause of communicative breakdowns in the lives of TBI patients. An interdisciplinary approach is needed to examine the nature of these complex problems and develop appropriate interventions.

Key words: communicative act, aphasia, brain damage

INTRODUCTION

In the specialized literature on traumatic brain injury (TBI), one can find reports suggesting that anywhere from 3% to 30% of these patients (Heilman et al., 1971; Hartley & Levin, 1990; MacQueen & Pąchalska, 2003) present with aphasia. Kerr (1995) suggests that these large discrepancies in the published statistics on post-TBI aphasia result from a number of factors, among which the most important are the following:

- the variability of the populations studied in particular research projects, in terms of average age, type of injury, localization and nature of brain damage, etc.;
- the varying amount of time that had elapsed from the injury until the study was performed (that is, whether the patients were in an early stage or a later stage in their recovery);
- variability in the duration of speech therapy, or its absence;
- differing definitions of aphasia, which can cause such possibly related speech disorders as dysarthria or apraxia of speech to be classified with aphasia in some studies, but not in others.

From the perspective of neurolinguistics and neuropsychology, this last observation is particularly important (Pąchalska, 1999). Although the word “aphasia” was defined for the first time over 130 years ago (Trousseau, 1865), we are still dealing with significant differences of opinion on the definition of aphasia, and all this lively discussion has so far not managed to put these theoretical disputes to rest (Pąchalska, 1999). Although there is always a temptation to make yet another contribution to this on-going discussion, the present study has no such goal. In clinical practice, it is easy to observe that even in those patients who have what is called “traumatic aphasia” (Pąchalska, 2003b), no matter whether they constitute 30% or 3% of all TBI patients, the course of aphasia is usually somewhat less severe than it is after, for example, a stroke. Moreover, the process of recovering from aphasia (from global aphasia, through dynamic aphasia, to mild anomic aphasia) takes place rather more quickly in the typical TBI patient than it does in the typical stroke patient. It is not difficult to find aphasic TBI patients with no symptoms of aphasia at all within two years after injury, which is surely not the norm in stroke patients.

All this is not to say, however, that TBI patients have no special problems in the area of communication, broadly understood. Clinical observation shows that both those patients who have measurable symptoms of traumatic aphasia and those who never had them, or no longer have them, experience hard-to-characterize difficulties in the process of communicating with others. What is more, in many cases these communicative problems are more serious precisely in those patients who, in standard diagnostic batteries, have scores within the norms: that is, generally speaking, they are able to construct and comprehend sentences that are well-formed, complete, and comprehensible. Still, despite the appearance of preserved linguistic competence demonstrated in tests, they frequently experience or cause serious misunderstandings in daily living, and not infre-

quently quarrels and major conflicts, caused, it seems, by their inability to communicate effectively with others.

The purpose of the present study is to examine the nature and etiology of non-aphasic disturbances of verbal communication occurring in TBI patients. Such disturbances are not measured in standard diagnostic batteries, largely because they are not easily quantified; for the same reason, we will use primarily qualitative methods in the present study. In order to give the theoretical considerations some concrete dimensions, we will present several case studies taken from our own clinical practice. Given our chosen methodology, we decided to present this material ethnographically (cf. Pąchalska, 2003b; Pąchalska et al., 2001).

SOME BASIC CONCEPTS IN COMMUNICATION

Before we can deal with disturbances of communication in TBI patients, we must begin by considering how the communicative process transpires in normal circumstances. This requires, then, that we first discuss the nature of the communicative act, since without that foundation there would be no basis for describing any pathology in this respect. For this purpose, we must begin by distinguishing the “communicative act” from the “speech act.”

A “speech act,” though originally defined in a specifically pragmatic way by Austin (1975) and Searle (1969), has come to mean the activity of constructing and/or receiving a specific verbal utterance at a given moment in time on the basis of linguistic competence (Kaczmarek, 1988). Thus defined, the speech act is a psychological phenomenon, in the strict sense - that is, it is a process that occurs in the mind of one person - and its products are mental phenomena: formulating or comprehending an utterance. A “communicative act,” for the present purposes, will be defined as the process of transmitting both linguistic and non-linguistic information at a given moment in time; as such, it is a social transaction, requiring the participation of at least two parties, the “sender” and the “receiver” (Pąchalska, 1999). In the course of a communicative act, the sender forms and transmits to the receiver certain contents, called the “message,” using for this purpose a channel of communication (based on sensory modalities) and a coding system (linguistic or non-linguistic) that is available and comprehensible to both parties. While the message is being transmitted, the receiver may or may not give feedback (linguistic or otherwise) that tells the sender whether or not the receiver is understanding and/or accepting the message.

The linguistic substance of the message, constructed from one or more speech acts, is called the “text” of the message, while other information that can be transmitted and received along with the text can belong to the context or the subtext (Pąchalska & MacQueen, 2002). The “context,” as the Latin derivation implies (*con* ‘with’) includes the entirety of the particular situation, within which a given communicative act takes place; the “subtext” (*sub* ‘under’) consists of information that lies under the surface structure of the message, supplementing, correcting, or even contradicting the surface meaning of the speech act that constitutes the

text of the message. Both of these terms, then, are used here with a rather wider meaning than in ordinary conversation.

The interactions among all these concepts is discussed elsewhere in more detail (Pąchalska, 1999).

The function of speech can be analyzed on an individual level (in “private space,” i.e. as it pertains the processes taking place in the brain/mind of a particular person) or the social level (the exchange of information with other people, which takes place in “public space”). In its individual aspect, speech entails the construction and interpretation of spoken utterances on the basis of linguistic competence (See Fig. 1). Tłokiński (1986: 65) adds that a given spoken utterance (or a written text) can participate in a speech act in several different modalities: parallelism, substitution, transmutation, or accumulation.

Speech in its social aspect is an act performed in the process of verbal communication, in which the sender transmits to the receiver certain contents, which the receiver takes in. This definition incorporates all the meanings of speech previously discussed (see also Kaczmarek, 1988). As shown in Fig. 2, in order for some degree of mutual understanding to be achieved, it is essential that both the sender and the receiver know a common language. Some degree of similar life experience would also seem to be a precondition for communication, but even so, the experience of each party in the communicative act can never be more than partially shared, as shown by the overlapping but separate ellipses in Fig. 2. Yet another factor that can complicate the process of communicating is the emotional filter (Kaczmarek, 1986), which affects the way the text is encoded and decoded, and the effect of distractors (“noise”) present in the context (Kaczmarek, 1998, 2005).

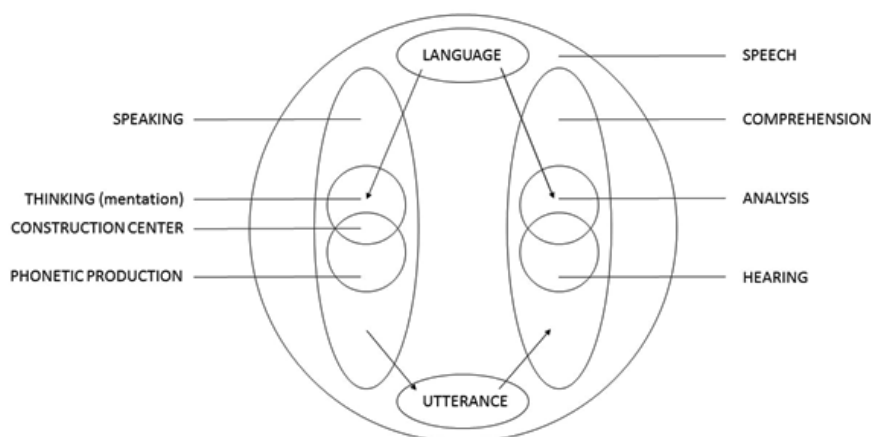


Fig. 1. Speech in its individual aspect. From: Pąchalska, Kaczmarek & Kropotov, 2014: 442

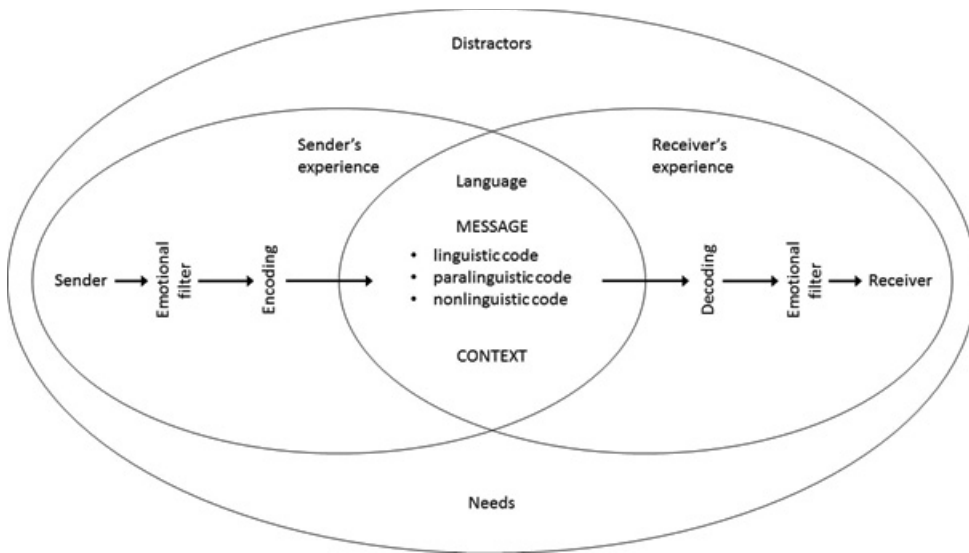


Fig. 2. Basic components of speech in its social aspect. From: Pachalska, Kaczmarek & Kropotov, 2014: 442

We can speak of “success” in communication when the text and subtext, delivered and received in a particular context, produce in the receiver an impression consistent with what the sender intended. This will not happen if:

- the text is incorrectly encoded by the sender or incorrectly decoded by the receiver;
- the context is not taken into account, or is misunderstood, by one or both parties;
- the receiver does not pick up on the subtext in the way the sender intended.

Communicative acts can of course be classified in various ways, such as the communication channel used, the relative status of the parties, the context in which they occur, etc. Perhaps the most important criterion, however, is the division by genre, which specifies the particular rules that apply, the form and content of the message, and the roles of the sender and receiver. For example: the words that you are reading just now belong to a particular genre, “scientific text,” which means that the message:

- is incorporated in a written text;
- has a certain logical structure;
- serves the purpose of conveying knowledge on an important scientific subject;
- originates from senders designated as “authors,” is transmitted in readable form by a secondary sender known as the “publisher,” who has decided that this message is to be transmitted in written form to an audience of subscribers;

- is addressed to multiple receivers called “readers,” who presumably belong to the same professional category (“scientist”) as the authors, and more specifically, share some common interests.

If the senders are unaware of or consciously disregard these or other rules of the genre in question, they run the risk of not only creating a cognitive dissonance, but also incurring a penalty, such as rejection of the meaning or importance of the text, a loss of professional reputation, etc.

One of the most common and most important genres is conversation, the chief characteristic of which is that the sender and receiver switch roles at least once, and frequently more often than that, with a certain rhythm. Without at least one instance of role-switching from sender to receiver or vice versa, a given communicative act cannot be classified as a conversation. Although at present there are certainly forms of carrying on a conversation at a distance (telephones, texting, e-mail, chat rooms, etc.), still, in the classical configuration of a conversation both sides are physically present in the same place, and the exchange of messages occurs in a real time regime. Depending on the context, broadly conceived, there are different regulative rules at work, governing such questions as:

- who initiates the conversation;
- what tone of voice is used;
- what semantic registers supply the lexicon for the conversation;
- who ends the conversation, and so forth. Again, a penalty is incurred when a rule is broken, such as labeling (“How rude!”) or outright rejection.

The fact that a communicative act is governed by genre-specific rules, more or less openly acknowledged principles, even laws, is a consequence of its social nature. As in every social transaction, the persons involved in the communicative act, in the norm, are at least somewhat aware of these rules, which the individual learns in the course of psycho-social development, regardless of whether or not these rules can be articulated verbally. In this respect, communicative competence is similar to grammatical competence, in that most people in a given language community manage to construct grammatically well-formed utterances even when they have little or no formal knowledge of the rules of grammar.

The foregoing discussion may seem to be of more theoretical than clinical interest, but that is not necessarily the case. Many patients who have undergone various types of brain damage experience serious difficulties precisely in this area. In particular, TBI patients often present with few or no measurable symptoms of aphasia, i.e. they are able to build and understand sentences that are grammatically correct and complete, but many can no longer operate within the rules of communicative genres as discussed above. They do not seem to know when to speak and when not to speak, what things to say aloud and what things to keep to themselves, when to say them, or to whom. Such violations of communicative rules are not as easily measured by tests as violations of syntactic or lexical rules, but they can be fully as destructive to the patients’ communicative competence, with all the social problems that entails for the patients themselves

and those around them. After repeated failures and breakdowns, these patients end up in a state of social isolation that in many cases can be more profound and more intractable than the situation of a patient with aphasia: the problems are often not attributed to the injury or illness, but to the patient's personality or character, precisely because violations of the rules of social discourse are not as overt as violations of syntax or diction. To be sure, aphasic patients are very often judged by persons unacquainted with aphasia to be intellectually compromised, when in fact many, if not most, are not. Patients whose communicative competence is compromised, with their linguistic competence largely intact, are often judged to be rude, perhaps even mentally ill, with all the emotional and social stigma usually associated with such labels.

As a social transaction, a communicative act is by its very nature intentional, that is, it arises from the conscious intention and initiative of at least one of the parties to the transaction, who is pursuing some sort of goal. This goal or purpose, which is often distinct from the semantic contents of the message (Frydrychowicz, 1999), can be more or less expressed, more or less conscious, and may even change in the course of communication, depending, for example, on the receiver's perceived reaction or lack of reaction to the message. Moreover, the intentionality of the communicative act also applies to the receiver, who, depending on the context and their own will or intention, can accept the role of receiver or decline it, can signal the fact that they have understood (or not) and accepted (or not) the message; they can also take on the role of sender, which in fact is the very definition of "conversation" as a communicative genre. Most importantly, their decoding of the message may depend on subjective factors over which the sender has little or no influence, and may be more or less aware.

While focusing on the social aspect of the communicative process, it is important to remember that the communicative act also has:

- a mental dimension, since participation in a communicative act, on the part of everyone involved, entails some very complex and very specific cognitive and emotional functions, associated with particular neural centers and pathways in the brain (Kaczmarek, 1993);
- a physical dimension, since it requires both the sender and the receiver to activate the motor and sensory apparatus needed to process the social and mental information involved in communication.

The boundaries between the mental, physical, and social dimensions of communication are often blurred in practice, of course, and sometimes in theory as well. Still, the division we have suggested will facilitate the analysis of normal and pathological processes that frequently overlap. Depending on the premises, goals, and methodology of the analysis, and the various elements of the communicative situation, we can either simplify or elaborate particular fragments of the process: by simplifying, we can achieve clarity, while elaboration gives greater scope and precision. In Fig. 1, for example, we have treated the sender and the receiver as indivisible units responsible for sending and receiving messages, respectively. From the perspective of ethnographic analysis, a deeper

analysis of the whole complex of sensory, motor, perceptual, cognitive, and linguistic processes taking place in each of the minds/brains involved would be beside the point, since ethnography qua ethnography is focused on the transaction in which the various parties are engaged, and looks at the individual experience only to a limited extent, insofar as the subjective experience effects the outcome of the social transaction. Analogously, the neuropsychologist by training and discipline studies the cognitive and emotional processes involved in communication, particularly in respect to their neuronal organization, to the extent necessary to achieve a better understanding of the brain-behavior relationship.

Clearly, the course of the communicative act requires the thorough cooperation of many organs and systems within the organism of each person involved in it. It can be easy to lose sight of this obvious truth, which is of central importance when we examine the reasons for communication breakdown in persons with damage to the brain, including TBI patients, and are confronted with so many complications. In order to understand why this or that particular patient has one set of problems in communication and not another, we must analyze the communicative act both ethnographically (in its social dimension) and psychologically, taking full account not only of the complex of processes taking place in the human brain, but also the impact and interaction of these individual, mental processes on the overall course of social processes - and vice versa. The approach we are suggesting is illustrated in Fig. 3.

Fig. 3. represents three systems – cognitive, linguistic, and sensory-motor – involved in communication between two persons. The process begins when the sender conceives the intention to transmit certain contents (“concept₁” on Fig. 3), formulates concept₁ into proposition₁ (the argument), which in turn is verbalized and transmitted as text₁, the utterance that leaves the private space

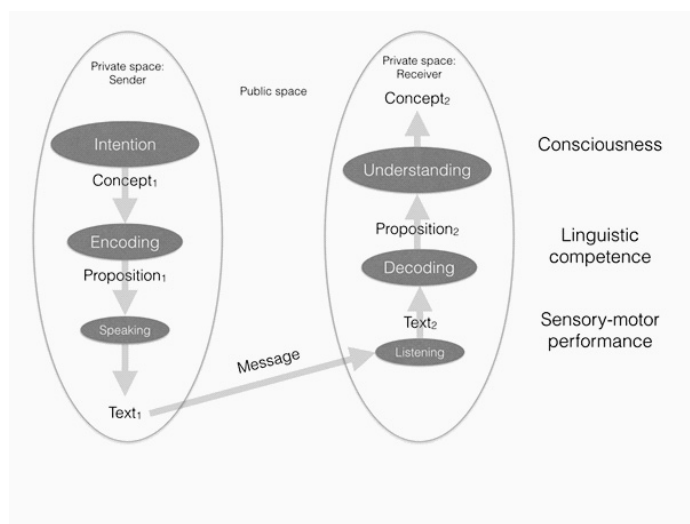


Fig. 3. A model of the communicative act from a neurolinguistic perspective

of the sender's mind and enters the public space, where it can be heard and comprehended by the receiver. A communicative act can be considered fully successful when concept₂ (formed in the mind of the receiver, on the basis of text₂, the words the receiver has heard and understood, and its interpretation, proposition₂) is essentially the same as concept₁. Clearly, though, text₂ will often differ from text₁, if, for example, the receiver has misheard the words spoken by the sender, and proposition₂ can differ from proposition₁ if the receiver uses or understands the shared language differently from the sender. Even if the message has been correctly received and decoded without garbling along the way, however, differences can arise in the transition from proposition₂ to concept₂, when the receiver is in a different emotional state, or has interests divergent from those of the sender.

It can be inferred, then, that the organs and processes involved in sending and receiving messages differ accordingly on the various levels of the nervous system. These differences are most pronounced at the level of the peripheral nervous system (the organs of speech and hearing), and least evident on the level of conscious thought (Luu & Tucker, 1998). In other words, the sender of the message uses one sensorimotor apparatus, while the receiver uses an entirely different system; the linguistic phases of the process involve the anterior structures of the speech area in the sender's brain, while in the receiver's brain the posterior speech areas are the most active. At the level of conscious thought, however, it is not an easy task to tease apart the passive, receptive functions from the active, creative ones (Pąchalska, 2003a).

The fact that any communicative act has mental, physical, and social dimensions is of great significance when we are working with TBI patients, since both the causes and the effects of any disturbances or interference in the process of communicating can be observed in all three of these aspects, though in different proportions, depending on the particular situation. For example, a patient with dysarthria can be hard to understand, due to the neuromuscular problems affecting articulation and voice control. In such cases, the physical aspect of communication is the central focus, since the ability to construct and interpret grammatically correct and socially appropriate messages is not impaired; in term of Fig. 3, we might say that the problem arises in the transition from Proposition₁ to Text₁. Still, in addition to the physical problem affecting the receiver's ability to understand the sender's words phonetically, there are also:

- cognitive problems, since the receiver cannot interpret the message if some of the key words used by the sender are not decoded;
- emotional problems, caused by the inability to get past the articulatory problems, which may produce frustration, distress, even anger in one or both of the parties, depending on the context;
- social problems, since the inability to get the message across in accordance with the sender's intention, especially if such failures to communicate are repeated many times, may well erode the social bonds between the sender and the receiver.

Thus the problem of communication, though it certainly includes those dimensions of linguistic performance that are compromised in aphasia, is not limited to them (Happe, 1998). As we have elsewhere argued (cf. Pachalska, 2003b), an adequate understanding of the problems raised here requires us to expand the concept of “language” by dividing linguistic processes into two categories: semantics and pragmatics. For the present purposes:

- the term “semantics,” though it has many different meanings in linguistics, will be used to designate those aspects of the process of verbal communication that pertain to word choice (the “lexicon”), morphology, syntax, and phonology (cf. Pachalska, MacQueen, 2002). For applied linguistics, these have been the traditional dimensions of language, understood as a conventional system of associated verbal signals with meaning, creating signs that can be transmitted to other users of the same language, who can then understand the intended meaning (Duszak, 1998);
- the term “pragmatics” (from the ancient Greek word *πρᾶγμα*, *pragma* ‘act, action, matter’) refers to concrete behavior, the way a particular sender in a particular situation uses (or misuses) the tools of semantics to achieve their purpose.

Although it is important not to oversimplify this point, still, on the most obvious level the processes of semantics are largely cognitive, taking place separately in the brain/minds of first the sender, and then the receiver. The problems of pragmatics take place more in the “public space” of social interaction: it is not easy to separate and analyze disturbances of pragmatics in one person without taking account of the other party’s involvement.

EXAMPLES OF COMMUNICATIVE FAILURE

In order to give some concrete dimensions to the theoretical considerations discussed to this point, we would like to present below several examples of conversations with TBI patients. The first two examples are descriptions of incidents that took place while gathering material for an article on physician-patient communication (Pachalska et al., 2001). The third example is an e-mail send by a TBI patient to a therapist. Finally, the fourth and fifth examples, which are rather longer, have been prepared from transcripts of conversations with TBI patients recorded during therapy sessions. These materials will be analyzed ethnographically (cf. Pachalska and MacQueen, 2002), since this continues to be the best way to describe the patient’s behavior in the entire context, which is scarcely possible in statistical studies. Breaking down the communicative act into quantifiable elements distorts the whole picture of the patient’s communicative performance.

TEXT, CONTEXT, SUBTEXT: PHYSICIAN-PATIENT CONVERSATIONS

The entire text of the first example is a question, asked by a physician of a TBI patient (an artist), who was awaiting a neurosurgical operation. The physician

stuck his head into the patient's room and asked, "Has the priest been here to see you?" The patient shook his head, but in a few moments had a catastrophic reaction, and the nursing staff was much engaged for nearly an hour to calm him down. The physician, however, did not wait long enough to see how the patient had reacted to his message; as soon as he got his non-verbal answer, he left. When he returned about an hour later to find the patient in such distress that sedation was being considered, he professed puzzlement.

Superficially, the message seems clear, with no subtext. In order to understand why communication broke down on this occasion, we need to consider the full context. From the sender's perspective, the pragmatic context was simple: the physician had seen the hospital chaplain making the rounds of the ward for a pastoral visit, a routine event for the hospital (Poland is a predominantly Catholic country). Since the physician did not want to be interrupted during his conversation with the patient, he only wanted to know if the chaplain had already been there, or if it would be better to postpone his visit. From the patient's point of view, however, the situation looked very differently: to begin with, he had no idea that he should expect a routine pastoral visit from the chaplain, and secondly, the only context he could understand for a priest coming to his room was to administer last rites. Since he was already - and quite naturally - anxious about the upcoming surgery, the patient became convinced that he would probably not survive. Even after the patient recovered from the surgery, which went well, without complications, he drew a picture of Death (cf. Fig. 4).

The physician, later, was inclined to attribute the patient's "hysterical" reaction to the injury itself (largely right frontal), and could not seem to grasp that his question had acquired an unintended and undesirable subtext.

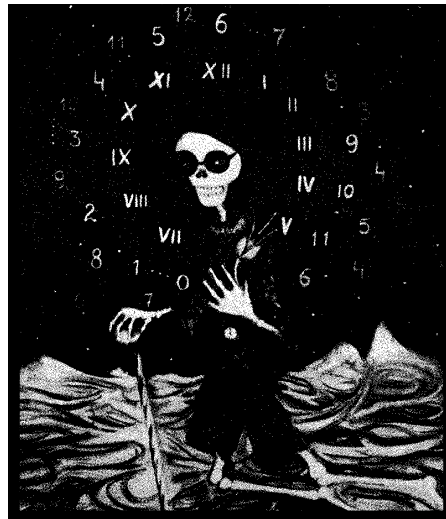


Fig. 4. Drawing done by a TBI patient, an artist, after surgery, indicating the lingering effects of a question asked by the neurosurgeon the evening before surgery (see text)

The next example also involves the problem of subtexts, this time non-verbal. After performing a physical examination of a patient who had just been brought to the emergency room with trauma to the head after an automobile accident, the attending physician, standing where the patient could still see him but could not hear him, spoke with the patient's family. During the conversation, the physician reassured the family that nothing serious had happened, and reinforced his statement with a typically Polish gesture (waving his hand in dismissal). The patient saw the gesture but did not hear the text, and so he interpreted the gesture to mean, "Nothing can be done, it's hopeless." In this case, the physician never realized that there had been a communication failure, or that he had inadvertently provoked serious anxiety in the patient's mind, while the patient would not accept any argument that the physician's gesture had meant anything other than "it's hopeless." When he entered rehabilitation over a year after the accident, he was still upset over the physician's "callousness," and the family's constant assurances that he had misinterpreted the situation had no effect.

Although it sometimes happens that gestures, being more "natural," are more communicative than words, still, we should bear in mind that the meaning of many gestures is fully as conventional as the meanings of words, and thus requires interpretation. This brings an important observation: namely, that damage to the brain can indeed impair the patient's ability to perform and interpret gestures. This is particularly likely to happen when strong emotions are involved, such as fear and anxiety (cf. Pachalska, 1999).

The next example of communicative dysfunction is a fragment from the tape recording of a conversation with a male TBI patient, who had undergone emergency surgery for a hematoma in the right frontal lobes. During rehabilitation, this patient was found to display many symptoms of frontal syndrome. A simplified version of conversational analysis has been used in Table 1 to present a portion of this conversation.

In neuropsychological testing, the patient was given the revised Frustration and Aggression Test, adapted to the needs of disabled persons (Pachalska & MacQueen, 1998). This is an association test, in which the patient is shown a drawing of a stressful situation in a social transaction involving two people, one of whom is disabled. The utterance of the non-disabled party is given on the drawing in a text balloon, while the text balloon for the disabled person's response is left blank. The subject's task is to look at the picture and determine how they would respond in that situation. In this conversation, the patient has just been shown a card showing a man who has fallen on the street, and a woman passerby, who remarks, "You must be drunk!"

The conversation continued for nearly an hour, during which the patient talked about rising prices, ill-mannered taxi drivers, his trip to the United States, the differences between Christmas traditions in different countries, and so forth.

The next brief example to be described here comes from an email sent to the first author of the present study by a 30-year-old male patient with traumatic injuries to the right hemisphere after an automobile accident. The e-mail begins

Table 1. Analysis of a conversation between a TBI patient with damage to the right frontal lobe and a therapist (see text for background)

Party	Text	Commentary
Therapist	So what would you say in this situation?	Although the patient has already been through several previous examples of the exercise, he examines the picture carefully but does not respond. After waiting for over a minute, the therapist has decided to prompt him.
Patient	[long pause] Well, nothing. I'd just get up and go on my way... Anyway, personally, I don't like drunks, you know, I don't like to have anything to do with them. With a drunk you're better off just staying away, they can be dangerous [laughs]. Call the cops, right? They'll take him home, or maybe, you know, to that place they have, what do they call it? The place where they take drunk folks they've picked up off the streets. Oh yeah, over there on Good Times Street [laughs]. No, that's really where it is, the name of the street, this place, what do you call it?	The patient first gives a brief and very minimal response, then launches into a lengthy digression (which in its entirety lasted nearly an hour on the recording) on drunks and drunkenness. During this time the patient exhibits some problems with remembering words.
Therapist	The drunk tank?	The therapist attempts to provide the missing word so that the patient can proceed.
Patient	Yes, that's right, the drunk tank. They'll give him a good shower, something to eat, if he's sick or hurt they'll fix him up, and then later he gets a card, for the amount, you know, a bill for everything. Oh, yeah [laughs]. So every sensible drunk always has something in his pocket, here [taps his shirt pocket], a few bucks for a taxi, just in case, you know. Well, more than a few bucks these days, right, what with everything going up and up and up all the time, not like it used to be.	The patient seems to have forgotten that he is being tested, and continues his digression. The therapist does not interrupt him, in order to determine how long the digression would continue. Note the number of empty phrases and the loose associations.

with an unusual salutation, difficult to render in English, but rather along the lines of "Well, hi there!" The writer had previously been a student of the addressee, and had no social justification for the flippant greeting, especially in Poland, where one almost never speaks so casually to persons who are not family or close friends, especially if there is a significant difference in age and social standing, as here.

The final two examples were provided by a 44-year-old male patient, hospitalized at the time in the Medical Rehabilitation Department of the Cracow Rehabilitation Center, where he had been referred with a TBI (he had been severely beaten in the course of a robbery), after two months in coma. He had no recollection of the incident at all. In the conversation reported here (Table 2), the therapist was attempting to collect basic background information; the conversation was recorded in the therapist's office, with the patient's knowledge and consent.

Table 2. Analysis of a conversation between a therapist and a TBI patient with damage to the right hemisphere consequent to a violent assault

Party	Text	Commentary
Therapist	What is your name?	Although the therapist already has much of the information in question, including the patient's name, the purpose of this and many other questions that will be asked of the patient is to measure orientation and autobiographical memory.
Patient	Officially it's T [patient gives his last name in Polish], but most likely my great-great grandfather had a different name, well, but I've gotten used to this one, the one I'm using [laughs]. Though it's a weird one, and anyway, people have all sorts of names, for example "Ball"... what a name, like he was fat or something [laughs].	The patient's last name in Polish happens to be a noun designating a certain non-European nationality. The tendency to give a facetious answer or deliver something in the style of a comic monologue had already been observed in virtually every situation.
	But that reminds me of angels, did you know ...	The patient begins an extended digression on angels, which he refers to as "wingers," using a term of his own devising that is consistent with normal word-formation rules in Polish. In general he shows a liking for this kind of formation, which will shortly recur in this conversation.
Therapist	And how old is your wife?	Redirect: the therapist is attempted to regain control of the conversation.
Patient	Can't you see that she's 37?	The patient seems unable or unwilling to provide information without facetious commentary. Throughout the conversation he will never give one simple answer to a simple question. His family (his wife and father especially) have been complaining about this, expressing great frustration.
Therapist	What kind of education does your wife have?	The therapist tries to continue the interview, not reacting to the attempted joke, so as not to give the patient an opening to start a commentary on his wife's age.
Patient	Oh, she completed some sort of year-long school sort of thing, something for whitecoaters.	"Whitecoaters" is another neologism, as above. In reality, the patient's wife is a pediatrician, not a medical technician, as might be inferred from what he says about her education.
Therapist	What are "whitecoaters"?	Although the patient has formed his neologism in conformance with normal Polish word-formation rules, the therapist wants to determine if he is aware of what he has done.
Patient	They're so-called "nurses," but anyway, to me they're more like waitresses, because they bring you just about everything, and each one has her own area to serve. These two rooms are mine, but I don't go to those over there, that sort of thing.	It seems interesting that the patient uses the phrase "so-called" before the perfectly ordinary word "nurses," though it would have been well-placed (especially in Polish) before his neologism, "whitecoaters." He also uses a Polish word for a group of tables served by a given waiter or waitress in a Polish restaurant. In fact, he is hospitalized in a small ward where all the nurses attend to all the patients. The family later reported that he came up with this joke while hospitalized elsewhere, and repeats it at any opportunity, real or contrived.

Therapist	When did you have your brain injury?	The therapist cuts off the digression and returns to the task.
Patient	I don't remember a thing. Probably it was 04/06/2000, something like that, but I don't remember a thing. It's a mysterious period in my life, covered by a black hole, and I don't remember a thing	He gives the date exactly as given here, with digits, in a form seldom used in Polish in conversation, when one would normally say, in words, "6th of April." This indicates that the date represents for him a bit of information that he recounts from having heard it many times, not from autobiographical memory. The expression "covered by a black hole" is grammatically correct and probably comprehensible, but it is not entirely logical.
Therapist	What is the first thing you remember after the incident?	The therapist is attempting to find the starting and ending points of the "black hole," that is, post-traumatic amnesia. This question was not on the questionnaire; the therapist looks up from the form, puts down the pen, etc.
Patient	Last of November is the first thing I remember. The last day of November. It was my birthday and they came to the hospital to wish me a happy birthday, and that's the first thing I remember. Earlier than that I don't remember a thing. I was just lying there unconscious or semi-conscious for several months. Just a black hole. I won't even try to guess how long it was, I don't want to be accused of making it up.	In the first sentence the patient has omitted a word that is really necessary in Polish, but immediately corrects his error and supplies the missing word. In the next sentence he uses a verb in the third person plural without any indication of who it was that came to see him. Rather than explain himself, he proceeds to explain his lack of memory.
Therapist	Do you have any paralysis?	The therapist has returned to the questionnaire, which motivates the otherwise abrupt change of topic.
Patient	No, I don't. Well, but they told me here in the hospital that what I have, it's sort of weakness in the limbs, and they told me I used to have some paralysis, and now I know it. But these last few months, I've started to notice that my left arm and left leg have finally started to work a bit, they're not paralyzed any more and I can use them. Well OK, in order to play billiards, I'm going to have some problems [laughs], but maybe after a little more time goes by and it'll get back... get back to normal....	In fact, the patient had a severe hemiparesis at the time, but when asked directly about it, always replied that he had no problems. As is often the case in patients with agnosia, he admits that he once had such problems, in the past, but no longer.
Patient	[A lengthy digression about billiards]	His remarks about playing billiards are interesting, in that he had never been a billiards player and had no idea how the game is played. However, on the night he was attacked, he had been visiting a friend, who owned a beer hall with a billiards table in a rougher neighborhood; two young men had followed him out of the bar and attacked him, stealing his wallet. As previously noted, he had no explicit recollection of the event itself, but it had been noticed that many of his "digressions" revolved around beer and billiards.

Therapist	Why are you here in the rehab unit?	The therapist tries to cut off the digression and resume the task.
Patient	I know there's nothing wrong with me, but yes, I suppose I'm not as fit as I should be. They went digging around in my grey matter, you know, and then, well, for a while I had some paralysis on the left side.	As before, the patient resolutely places his symptoms in the past, though in fact he cannot yet walk unassisted. Another typical reaction in anagnosia is to blame the problems he "used to have" on the physicians. The expression translated here as "digging around in my grey matter" is a peculiar one in Polish, though it is grammatical and comprehensible in the context.
Therapist	Where are we right now?	The therapist is attempting to determine the patient's spatial orientation.
Patient	In Krak's castle.	Again, the patient will not give a simple answer. The interview is taking place in Cracow (Polish: <i>Kraków</i>), which according to a local legend was founded by a mythical king named "Kraak."
Therapist	Which is to say...?	Although the therapist knows perfectly well what the patient means by "Kraak's castle," and supposes that the patient also knows, still, it seems important to determine whether or not the patient can be induced to give simple information without joking.
Patient	Officially, the name of this castle is now Kraków. But Krak lived here, too, and he drank here [laughs].	It seems almost, but not quite possible to get a simple answer out of the patient. Having reluctantly given the expected one word answer, he immediately launches into an elaboration of his previous circumlocution.
Therapist	What floor are we on?	Continued examination of spatial orientation.
Patient	Well... as far as I can remember, this library is located on the eighth floor. But no one seemed to be able to tell me where the 8th floor is. But you know, I wasn't counting as we were on our way here, since I was trying to concentrate on not using the crutches, so I didn't notice how many flights of stairs we went up, as we were rising up.	In reality, the room is not a library (though it had a bookshelf in it with some books), and is located on the third floor of a three-story building. The patient seems to find the question puzzling, and tries to explain the difficulty he has in answering it. The expression "were rising up" used in the last sentence is unusually poetic for this situation; in Polish, it connotes a kind of exaltation.
Therapist	Well, how many flights do you think you passed? Were you climbing stairs for a long time?	The therapist tries to get the patient to make his answer more precise.
Patient	I hope it wasn't long. The reason I hope is that I'm counting on my legs being in better shape. OK, maybe we went up 3 or 4 flights. But I'm not sure. And if you were to ask me how many steps I took getting here, I won't be able to answer that, either [laughs]. There, where the stairs ended, there was a corner with handrails, but how many times that happened, I don't know. I don't know. But if there were only two corners, then we must be on the third floor.	It does not seem clear why the patient says "I hope it wasn't long," instead of saying merely "No, it wasn't long." His remark about a hypothetical second question regarding the number of steps he had taken on his way is in fact typical of his strategy when he is unable to answer a question: that is, he ridicules and satirizes the question.

Therapist	Is that why you were late for this meeting?	The patient had arrived half an hour late, unaccompanied (which makes it difficult to understand why he had previously used the first person plural "we" when talking about his trip).
Patient	Yes, that's right. I didn't know there were two corners. But if there were two corners, then we're on the second floor.	At first it seems that the patient has finally just answered "yes" to the question. It can be inferred from the rest of his answer, however, that he was not paying attention to the question, but was still working out the answer to the previous question - wrongly, as it turns out.

Another interesting example of this same patient's problems with communication can be seen in an email sent to the first author of the present study just before he left for a stay at the health resort in Ciechocinek, Poland. The email was sent on the day after the 9/11 terrorist attack on the World Trade Center in New York. It reads, "I'm shocked by what just happened across the ocean. What a shock for people! Condolences for Prof. MacQueen. So many innocent fellas lost their lives for no reason. Tomorrow I set sail for Ciechocinek. I'll hop around a bit, so I can 'take it to the next level' as far as walking is concerned. I wish everyone all the best.. All of you, anyway."

If we analyze the style of this email, we can see that it expresses shock and sympathy, and yet in the same sentence the patient used the very casual word "fellas," which in ordinary circumstances would raise some question as to the writer's sincerity. The letter contains numerous grammatical lapses (some of which are unusual in a native speaker of the language), spelling errors, colloquialisms, and numerous diminutives, which in Polish can seem, depending on the context, either childish or simply vulgar. These errors are nearly impossible to render in translation, but would be immediately apparent to a native speaker of Polish. Finally, the expression "set sail" is distinctly odd, since the journey from Cracow to Ciechocinek is a land journey of several hours by car or train.

In our clinical work with these patients (and others as well, especially those with right hemisphere damage), we have often observed that they seem unwilling or unable either to adapt the tone of their utterances to the context and genre, or to maintain a consistent tone. Their language, as in this example, slides from official to poetic to colloquial, even vulgar, with no obvious transition, often leaving the listener confused, amused, or offended.

DISCUSSION

The kinds of communication problems discussed in this article do not occupy a particularly large place in the literature on the rehabilitation of TBI patients. For example, an extensive search of such data bases as PsychLit and PubMed performed by the present authors found only one item (from 1992) that was entirely devoted to the problem at hand (McDonald, 1992). In the *Handbook of neurolinguistics*, there is a single short chapter on communication problems (Luu & Tucker, 1998), and it deals only with autistic children. It is true that there is more and

more literature on qualitative methods in aphasia research (Pąchalska & MacQueen, 2002; Kearns, 1999; Damico et al., 1999), as applied in the present study to analyze the verbal behavior of patients in the context of communication, but for perhaps obvious reasons the problems of persons who have communication problems without aphasic symptoms is hardly mentioned, if at all.

There is, on the other hand, a fairly substantial literature on the subject of disturbances of “discourse” in TBI patients, especially in children (Brookshire et al., 2000; Ewing-Cobbs et al., 1998; Coelho et al., 1995), and in patients with aphasia (Pąchalska, 1999). Although the topics of discourse and communication certainly overlap (as indicated by the frequency of cross references to “discourse” in a search for literature on communication problems, still, there are subtle but important differences between these two concepts, both theoretically and clinically. As Duszak points out (1998), when we focus on discourse, we are still talking about a purely linguistic aspect of human behavior in particular situations. From the point of view of neurolinguistics, discourse is the next higher level of linguistic analysis after syntax, as shown in Table 3.

It can be inferred from these examples that the communication problems of interest in the present study cannot be reduced to any of the rows or columns of Table 3, since most of these problems manifest themselves only in the context of the interaction with another person. The problem here pertains more to the transfer of different kinds of information, than to the correctness of the linguistic behavior of one party or the other. This produces the paradoxical result that aphasic patients and their families often complain less about these kinds of problems than do non-aphasic patients and their problems, since in dealing with a person who has perceptible problems in speech, almost any conversant will almost automatically adjust their expectations to the patient’s perceived limitations in this respect, even excessively so, whereas the patient who speaks in grammatically and lexically correct sentences does not “get a break” from the conversation partner.

At first glance, it may seem that the problem under discussion could be solved merely by introducing the concept of pragmatics. Certainly, it is hardly possible to discuss discourse without reference to pragmatics (Duszak, 1998; Pąchalska & MacQueen, 2002), since the latter term refers to the adaptation of the text to

Table 3. The development of the utterance from the phonetic level, through the production of words and sentences, to the organization of the text

Level	Process	Material	Product
1.	phonology	verbal sounds	phoneme
2.	lexicon	phonemes	morphemes
3.	syntax	words	sentences
4.	discourse	sentences	text

the concrete situation in which it is formed. Even so, however, there are certain important aspects of the problem that could easily pass unnoticed in a discussion of pragmatics per se, since the focus of pragmatics remains the individual utterance. The communicative act is something other than a speech act at the highest level of complexity. In order to understand it, of course, there are certain linguistic concepts that must be included, such as discourse and pragmatics; still, when the problem is approached from the perspective of communication, the point of reference is the communicative act qua social transaction, including the persons involved in it.

On this basis, then, it might be possible to argue that the problem of communication should belong to the sphere of sociology, or ethnography, or communication studies. There are good reasons, after all, why the qualitative methods applied here have been developed within the social sciences (Pąchalska, 2002). A purely sociological or ethnographic approach, however, cannot explain why the kinds of communication problems described here take place precisely in persons who have incurred damage to the brain. From the point of view of the social sciences, the social transaction involved in the communicative act can be analyzed on the basis of the scheme presented in Fig. 1, which is to say, treating the persons involved as the atomic, indivisible units of the social transaction. The weakness of this approach is that it gives us no insight into the specific nature of the problems faced by TBI or other brain-damaged patients (Pąchalska, Kaczmarek & Kropotov 2014).

It could also be argued, then, that the communication problems faced by TBI patients are indeed the proper subject of psychology. The objection here, however, is that the problems involved, though they obviously include important cognitive and emotional aspects, are not limited to mental phenomena, which are, after all, the focus of interest in psychology (Pąchalska, 2003a).

Perhaps the best solution here is to return to the scheme presented in Fig. 3, where each of the established disciplines and lines of inquiry discussed above takes in only a portion of the entire scheme, contributing its own depth of understanding in a particular aspect of the problem, at the cost of passing over everything that lies outside its own sphere of competence.

From the patient's perspective, these methodological issues are not merely an abstraction, since they have an immediate impact on the course of treatment. To whom can the patient and family appeal for help when they are confronted by problems in communication? The issues in question do not belong in any obvious way to the sphere of interest or competence of the speech pathologist, or the psychologist or psychiatrist, or to the social worker, even less so the neurologist or primary care physician. What this means in practice is that the patient with communication problems consequent to a TBI (or stroke, or dementia, for that matter), of the type described here, most often remains alone with the problem, while every therapist involved in care for this patient regards the problems as either non-existent, or non-essential, or as something that someone else should deal with. Who can help the patient who does not understand why his

friends, and even his family, slowly withdraw from contact with him? Who will help the patient who tends to ramble on and on, as in the third example presented here, to get his digressions under control?

There are, unfortunately, no easy answers to these questions. The purpose of the present study was to draw attention to the larger problem of communication disorders in TBI patients. Further research is needed to define the problems and develop interventions, and by necessity this will need to be fully interdisciplinary research, conducted on extensive clinical material. Only research with a broad horizon can help to develop methods, strategies, and therapeutic tactics that can help these patients to recover their proper place in society.

CONCLUSIONS

1. Aphasia is not the only cause of communication problems in TBI patients; on the contrary, in many cases communicative problems are more intractable in patients who do not have the classic symptoms of aphasia.
2. In many TBI patients the inability to understand the contexts and subtexts of their own and others' messages often leads to serious interference in the communicative process.
3. Research on pathologies of communication, especially communicative transactions, requires the application of several different methods of analysis, including qualitative methods.
4. Any approach to understanding and resolving the communication problems faced by TBI patients (and other patients with brain damage) must be truly interdisciplinary, including both theoretical foundations and clinical material from different scientific disciplines.

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