Effectiveness of communication/interaction strategies with patients who have neurological injuries in a rehabilitation setting

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Abstract
Primary objective: A correlational research design was used to examine the relationship between use of interaction strategies and success of interactions between patients with neurological injuries and licensed healthcare providers. It was hypothesized that using specific interaction strategies would increase the success of interactions between patients and staff.

Methods and procedures: One hundred and two 5-minute interactions between licensed healthcare providers and adults with neurogenic cognitive-linguistic impairments were videotaped. Staff members involved in the interactions completed a questionnaire stating how successful they felt the interaction was and what positively or negatively impacted the interaction. Five speech-language pathologists viewed the interactions, rated the overall success of each, reported which interaction strategies they observed being used and indicated which strategies they felt most positively impacted the interactions.

Results: Use of communication strategies aided the interactions. It was found that as more strategies were used success of the interactions increased.

Conclusions: Interactions were aided by the use of communication strategies, especially when multiple strategies were used. Some strategies were more beneficial than others. Training staff in the use of communication strategies may help improve patients’ satisfaction and success in rehabilitation.

Keywords: Traumatic brain injury, acquired brain injury, interactions, communication strategies

Introduction
Patients with intact cognition and communication abilities in a medical facility are often asked to assess and report about care they have received. Previous studies, however, have stated that patients with communication/cognitive disorders have not been asked about their care and/or their responses have not been deemed reliable [1, 2]. Therefore, the responsibility for ensuring the patient’s best care should fall upon the staff that works with the patient.

Previous research has examined which personal characteristics of healthcare providers patients with TBI valued. The research found that clear and honest communication, support, respect, being a good listener and understanding on the part of the staff member were the most prevalent [3]. Past research studies that have examined communication between healthcare providers and patients with cerebrovascular accidents (CVAs) or patients who did not have neurological impairments all agreed that use of communication strategies was important in the care and education of patients [1, 4–11]. Small et al. [12] examined the effectiveness of communication strategies used by caregivers of persons with Alzheimer’s disease during activities of daily living. Caregivers reported that the most effective communication strategies to use with individuals who had Alzheimer’s disease were to decrease distractions and use simple sentences and yes/no questions.
Although computer-assisted research tools such as CINAHL, MEDLINE, HealthSTAR and PsycINFO were utilized for a literature review, no specific research was found that had examined staff routine use of strategies to help improve interactions with those patients who have a traumatic brain injury (TBI) or acquired brain injury (ABI). Therefore, specific examination of communication interactions between staff and patients with TBI and ABI is important in order to determine how use of communication strategies affects those interactions, which can ultimately affect patients’ performance and satisfaction in a rehabilitation setting.

There are many communication strategies that can be beneficial when interacting with patients that demonstrate communication/cognitive impairments. These strategies are utilized by speech-language pathologists on a routine basis when treating patients with TBI and acquired brain injury (ABI). Some examples include use of simple, direct sentences; provision of strategy-specific instructions; asking the patient to repeat what they have heard; and writing down information for the patient. Other beneficial strategies may include use of scripted routines, giving the patient a choice, offering pictured or written choices, use of multiple modes of communication and repetition of information given to the patient. When interacting with patients who have TBI or ABI, use of announcing topic changes and asking the patient to clarify any unclear messages may be helpful.

The goal of this study was to examine the effectiveness and frequency of strategy use and the type of communication strategies used by healthcare providers when interacting with patients who have neurological injuries resulting in communicative/ cognitive impairments.

Methods

Before conducting this research, the researchers received approval through the University of Missouri’s Health Sciences Institutional Review Board (IRB). The IRB also approved consent forms, which were presented to and signed by all participants included in the study.

Participants

This research involved the evaluation of communication interactions between licensed healthcare providers and adults with neurological injuries resulting in communication/cognitive impairments in an in-patient rehabilitation setting. All staff members and patients were from the same rehabilitation facility. Thirty-six licensed healthcare providers consisting of physicians (n = 1), nurses (n = 7), physical therapists and physical therapy assistants (n = 13), occupational therapists and certified occupational therapy assistants (n = 8) and speech-language pathologists (n = 7) consented to participate in the research. These healthcare providers worked on the Traumatic Brain Injury Unit and/or the Comprehensive Rehabilitation Unit that serve individuals with acquired brain injuries.

Forty adult patients with neurological communicative and/or cognitive deficits consented and participated in the study. The video-taped interactions of four of the patients, however, had to be discarded due to technical difficulties with the video-tape containing their interactions. Of the 36 patients included in the final analysis of the study, 23 had TBIs, 10 had cerebrovascular accidents (CVAs) and three had diagnoses of anoxic brain injury.

The intention of the researchers was to invite all in-patients of the facility with communication and/or cognitive deficits to participate in the study, however there were factors that prohibited this. Many of the patients receiving rehabilitation at this facility were a great distance from home and their families were often not present during the hours when the researchers were present. In these cases, if the patients were not their own guardian or if their Speech Pathologist reported their comprehension to be too poor to understand the consent form, they were not invited to participate in the research. Patients who were not their own guardian or who exhibited severe to profound deficits were invited to participate if their guardian was present to make that decision for them and agreed to sign the consent form. There were also periods of time when the researchers had other professional obligations and the data collection for the research had to be put on hold.

Although the patients themselves were not specifically studied, their reactions/responses during communication interactions with the staff members were evaluated. The patients were identified as one of two severity levels for their communication and cognitive skills as determined by Functional Independence Measures (FIM scores) [13]. Within these scores, abilities are rated on a scale of ‘1’, indicating complete dependence or profound impairment, to ‘7’ indicating function that is within normal limits or completely independent. Of the patients included in the study, 15 were rated as having severely-to-profoundly impaired cognitive-linguistic abilities and 21 had minimally-to-moderately impaired abilities. The FIM scores/severity levels were determined by the licensed Speech-Language Pathologists who were providing the patients’ care. The median FIM score for the patients in this study was 3 for cognition
(moderately impaired—this included both memory and problem-solving abilities) and 4 for communication (mildly impaired—this included both auditory comprehension and verbal expression abilities).

Procedures

During this study, 116 5-minute interactions between in-patients and licensed healthcare providers were recorded. As previously mentioned, only 102 of the 116 interactions could be judged due to technical difficulties with the tape containing 14 of the interactions. Only a few of the interactions were between patients and the doctor or nurse providing primary care \((n = 5)\). Most of the interactions recorded were between patients and licensed therapists (Physical Therapy, Occupational Therapy and Speech Therapy) \((n = 97)\) because therapy schedules allowed easier planning of video-recording times.

Each patient was recorded between 3–5 times and each patient’s interaction was with a different staff member. Each interaction was recorded for 5 minutes within the natural context of the patients’ therapy sessions or during spontaneous conversations between the patients and their physician or nurse. Neither the staff members nor the patients involved knew when their interactions would be taped to help ensure that the interactions were natural and representative of the typical interaction that occurs between the patient and staff member. Immediately following each interaction, the staff member in the interaction completed a questionnaire in which a rating of 1–5 was assigned according to how successful the interaction was determined to be and they were asked to check, from a list of choices, what factors contributed to or negatively impacted the interaction (see Table I). The rating system was as follows: 1 = the staff member observed the patient attending to and participating in 80–100% of the task, 2 = 60–80% of these behaviours, 3 = 40–60%, 4 = 20–40% and 5 = 0–20% of these behaviours.

Each patient in the study was video-taped during an interaction with a speech-language pathologist. The speech-language pathologists observed in these interactions did not include either of the researchers or any of the judges reviewing the video-taped interactions. Therefore, since some of the patients in the study were typically seen by one of the researchers or one of the judges, they were video-taped interacting with a speech-language pathologist who was not a regular therapist in the patients’ treatment team.

Prior to being video-taped, the speech-language pathologists involved were allowed to view the checklist of communication strategies that would be used by the judges. This allowed the researcher to investigate whether increased awareness of the strategies made a significant difference in whether strategies were used or in the number of strategies used and whether the use of strategies significantly impacted the success of the interactions.

Judges

Five speech-language pathologists with at least 5 years of experience were judges in this study. These judges were from the same rehabilitation facility as the staff and patients involved in the study, although four of the five judges worked in different units of the facility and were not familiar with the patients and did not work directly with the staff members involved in the interactions. These five judges were also not involved in any of the video-taped interactions.

Judging procedure

Once all of the interactions were obtained, the judges reviewed the video-tapes and rated the success of each interaction using the same rating scale (see Table I) used by the staff members involved in the interactions. The judges did not see how the staff members rated the interactions between themselves and their patient. The judges then reported whether or not they observed communication strategies being utilized. If they observed strategies being used, they chose all of the strategies they observed from a choice of 14, which included an option of ‘other’ (see checklist in Table II). This checklist was made up of specific strategies that are commonly used by speech-language pathologists when treating patients with communicative/cognitive impairments. The judges then rated from 1–3 those strategies they felt were the most helpful during that interaction. If they did not observe strategies being used they chose from the same checklist the strategies they believed would have been helpful in those circumstances. To examine reliability between judges, the first five interactions were independently judged by all five judges. The data obtained from the staff members involved in the interactions and the data obtained from the judges was compiled on an Excel Spreadsheet and submitted to statisticians at the University of Missouri for analysis.

Results

Information gathered in this research was analysed using descriptive and summary statistics conducted by the researchers as well as the statistics department
of the University of Missouri-Columbia. Results are presented as answers to research questions below.

**How consistently were strategies used across all interactions?**

The speech pathologists who were judges in this research reported that communication/interaction strategies were utilized in 94% of the interactions (96 of 102 interactions).

**How successful were those interactions in which judges indicated that no strategies were utilized?**

Of the six interactions in which judges indicated that no strategies were utilized, four were rated as less successful (success ratings of ‘3’ and ‘4’). In the two interactions rated as successful (success ratings of ‘1’ and ‘2’), the patients included in those interactions had cognitive-linguistic abilities that were only mildly impaired.

**What was the reliability of ratings for success of the interactions between the five speech pathologist judges?**

Although all five judges viewed and rated success of the first five interactions, only four ratings were analysed, as one of the judges failed to document a rating score for one of the interactions. For two of the four interactions that were analysed, there was 100% agreement regarding success of the interactions (on the ‘1’–‘5’ scale) between all five judges. In the other two interactions, the standard deviation for agreement was 0.447, indicating a high level of agreement.

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**Table I. Interaction rating form utilized by staff subjects and speech pathology judges to rate success of interactions that were video-recorded.**

<table>
<thead>
<tr>
<th>Patient #:</th>
<th>Interaction #:</th>
</tr>
</thead>
</table>

**Staff Subject Rating**

Please rate the success of this interaction on a scale from 1–5:

- 1 – Patient was compliant with, attentive to, and participated with 80–100% of task given or topic discussed.
- 2 – Patient was compliant with, attentive to, and participated with 60–79% of task given or topic discussed.
- 3 – Patient was compliant with, attentive to and participated with 40–59% of task given or topic discussed.
- 4 – Patient was compliant with, attentive to and participated with 20–39% of task given or topic discussed.
- 5 – Patient was compliant with, attentive to and participated with 0–19% of task given or topic discussed.

What factor(s), in your professional opinion, affected the success of this interaction (positively or negatively)? Please check all that apply.

- Deficits were so severe that even though strategies were attempted they were not helpful
- Lack of familiarity with this patient
- Internal agitation secondary to brain injury
- A positive/negative (circle one) event occurred with this patient prior to session
- Strategies were employed to enhance the patient’s comprehension, expression and/or cognition
- I didn’t know what strategies to try with this patient.
- Other: __________________________________

**Table II. Checklist of communication/interaction strategies given to staff subjects who were speech pathologists and to the speech pathology judges when viewing the video-recorded interactions.**

1. Use of short, simple, direct sentences and directions
2. Ask patient to repeat what he/she has heard
3. Ask patient if she/he has understood information
4. Allow patient time to respond to questions/directives
5. Write down information for patient
6. Reduce distractions as much as possible
7. Make eye contact and face the patient
8. Give the patient a choice
9. Repeat information given to the patient
10. Clarify intent of patient’s communication
11. Announce topic/activity changes
12. Use several modes of communication
13. Use gestures and/or pointing to supplement spoken communication
14. Other: ______________________

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In interactions rated by all judges, what was the agreement about which strategies were used?

In order to determine agreement between judges regarding which of the 13 strategies were utilized within the first five interactions, information was tallied for each strategy and judge. Percentage agreement was then determined based on those comparisons. Results indicated that all five judges were in agreement up to 47% of the time, four of the judges were in agreement up to 61% of the time and three of the judges were in agreement up to 76% of the time.

Regarding number of strategies used and success rating of interactions, how did interactions differ between staff subjects who were speech-language pathologists who viewed the list of 13 strategies prior to being video-taped and other staff subjects who did not view the list of strategies?

In order to answer this research question, number of strategies utilized by staff subjects who were speech language pathologists were totalled for each interaction as well as number of strategies used in each interaction by other staff subjects working with the same patient. It was found that in 57.5% of interactions (n = 56), the speech-language pathologist used more strategies with a patient compared to other staff members working with that same patient. Judges determined that success of interactions was higher for staff subjects that were speech-language pathologists in 11 of 36 patients. In interactions for 23 of the 36 patients, success ratings were the same for both staff subjects who were speech-language pathologists and other staff subjects. Lower success ratings for staff subjects who were speech-language pathologists were obtained for two of the patients.

What was the correlation between the number of communication strategies used by staff subjects and the success of the interactions?

Within Pearson correlation statistical analysis, the sum of strategies used in each interaction and the average success rating for each interaction as determined by the judges were evaluated. A positive correlation was found (0.0348), indicating that as more strategies were used, the success ratings for the interactions increased (p < 0.05).

Across all cognitive-linguistic severity levels, which interaction strategies were utilized most in interactions ranked as ‘1’ or ‘2’ and which strategies were ranked as ‘most successful’ by SLP judges overall?

Descriptive statistics were utilized to examine the information in this question and information is listed in Tables III–VI. Frequently, strategies used most often in successful interactions (those rated as ‘1’ or ‘2’) were the same strategies indicated as ‘most successful’ overall by SLP judges. Two strategies were ranked in the top three for all patients, regardless of the severity of their cognitive-linguistic deficits. The use of strategies for ‘short, direct sentences and directions presented one at a time’ and ‘facing the patient and making eye contact’ were found to be present in all interactions rated as successful and were among the most successful interactions overall as rated by SLP judges. Differences found between cognitive-linguistic severity groups included the use of ‘repetition of information’ and ‘clarification of communication attempts’ in the severe to profoundly impaired group v the use of ‘allowing the patient extra time to respond to questions and directions’ and ‘supplementing communication with gestures and/or pointing’ in the mild-to-moderately impaired group.

Discussion

Results from the current study support findings that use of communication strategies is beneficial with patients who have neurologic injuries. In addition, this study examined how often strategies were used, the correlation between the severity of cognitive-linguistic deficits and the use of strategies, whether increasing the number of strategies used was beneficial, and which strategies appeared more beneficial than others. Similar to results of a previous study [12] that examined caregivers and patients with AD, this study found that use of short, simple sentences was a highly beneficial strategy. In addition, the current study found the most frequently used and effective strategies as determined by judges’ examination of the interactions included facing the patient and making eye contact, repeating verbal information given to the patient,
Table III. Frequency of strategy use over interactions with success ratings of '1' or '2' as determined by judges.

<table>
<thead>
<tr>
<th>Communication/interaction strategies</th>
<th>All interactions ((n = 88))</th>
<th>Interactions including patients with mild-to-moderate severity cognitive-linguistic deficits ((n = 52))</th>
<th>Interactions including patients with severe-to-profound severity cognitive-linguistic deficits ((n = 38))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of short, simple, direct sentences and directives</td>
<td>63*</td>
<td>16</td>
<td>25*</td>
</tr>
<tr>
<td>Ask patient to repeat what he/she has heard</td>
<td>1</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Ask patient if he/she has understood information</td>
<td>14</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Allow patient time to respond to question or directive</td>
<td>43*</td>
<td>17*</td>
<td>12</td>
</tr>
<tr>
<td>Write down information for patient</td>
<td>6</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Reduce distractions as much as possible</td>
<td>14</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Make eye contact and face the patient</td>
<td>49*</td>
<td>38*</td>
<td>12</td>
</tr>
<tr>
<td>Give the patient a choice</td>
<td>15</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Repeat information given to the patient</td>
<td>40</td>
<td>15</td>
<td>19*</td>
</tr>
<tr>
<td>Clarify intent of the patient’s communication</td>
<td>33</td>
<td>21*</td>
<td>13*</td>
</tr>
<tr>
<td>Announce topic/activity changes</td>
<td>40</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Use several modes of communication</td>
<td>15</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Use gestures and/or pointing to supplement spoken communication</td>
<td>43*</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Other</td>
<td>16</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

*Denotes top three most frequently used strategies within each group.

Table IV. Interactions including all patients, regardless of cognitive-linguistic severity levels: top ranked strategies in interactions with success ratings of ‘1’ or ‘2’ and ‘most successful’ interaction strategies as ranked by SLP judges.

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Most frequently used strategies in interactions ranked as ‘1’ or ‘2’ ((n = 90))</th>
<th>Top three ‘most successful’ strategies as determined by SLP judges ((n = 94))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of short, direct sentences and directions presented one at a time</td>
<td>Most frequently used (used in 63 of 90 interactions)</td>
<td>Ranked as most successful (in 25 of 94 interactions)</td>
</tr>
<tr>
<td>Facing the patient and making eye contact during the interaction</td>
<td>2nd most frequently used (used in 49 of 90 interactions)</td>
<td>Ranked as 2nd most successful (in 15 of the 94 interactions)</td>
</tr>
<tr>
<td>Allowing the patient extra time to respond to questions and directions</td>
<td>3rd most frequently used (used in 43 of 90 interactions)</td>
<td>Ranked as 3rd most successful (in 10 of 94 interactions)</td>
</tr>
<tr>
<td>Supplementing communication with gestures and/or pointing</td>
<td>3rd most frequently used (used in 43 of 90 interactions)</td>
<td></td>
</tr>
</tbody>
</table>

Table V. Interactions including patients with severe-to-profound cognitive-linguistic deficits: top ranked strategies in interactions with success ratings of ‘1’ or ‘2’ and ‘most successful’ interaction strategies as ranked by SLP judges.

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Most frequently used strategies in interactions ranked as ‘1’ or ‘2’ ((n = 38))</th>
<th>Top three ‘most successful’ strategies as determined by SLP judges ((n = 45))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of short, simple direct sentences and questions</td>
<td>Most frequently used (used in 25 of 38 interactions)</td>
<td>Ranked as most successful (in 14 of 45 interactions)</td>
</tr>
<tr>
<td>Repetition of information or requests</td>
<td>2nd most frequently used (used in 19 of 38 interactions)</td>
<td>Ranked as 2nd most successful (in 8 of 45 interactions)</td>
</tr>
<tr>
<td>Clarification of the patient’s communication attempts</td>
<td>3rd most frequently used (used in 13 of 38 interactions)</td>
<td>Ranked as 3rd most successful (in 6 of 45 interactions)</td>
</tr>
<tr>
<td>Facing the patient and making eye contact</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
allowing time for the patient to respond and using gestures to supplement spoken communication. The study with patients with AD also found that reducing distractions was a highly beneficial strategy. This was not a frequently observed strategy by the judges in the current study. This may have been a result of the therapeutic setting in which the research was conducted, as the rehabilitation environment is routinely controlled to reduce distractions as much as possible. In the AD study, the interactions took place in the patient’s home setting where more distractions are inherent. The results of this study are also consistent with studies of processing speed, attention and working memory which have found that both comprehension and expression in individuals with neurogenic communication disorders are best when the complexity of information was kept low, presentation of information was slower and when those individuals were focused on their conversational partner rather than dividing their attention between a communication task and another task [14–17].

One limitation of the study is that the results were based on the subjectivity of the judges. However, the reliability between the judges was found to be high. It is also acknowledged that the statistical significance of the reliability results would have been stronger if the reliability analysis had been based on more than five interactions. Another limitation of the study was the fact that the presence of the researcher videotaping could change the interactions, but the participants were not told when they would be videotaped to help decrease the impact of the researcher’s presence.

Because the timing of interactions between patients and their physicians and nurses was unpredictable, 97 of the 102 interactions recorded were between therapists and patients. Because patients also frequently interact with physicians and nursing staff, study results would have been more reflective of strategies used by all licensed healthcare providers if more interactions with them had been included. Current research suggests that a study examining interactions between physicians/nursing staff and patients with neurologic impairments be completed.

Not only do patients interact with their treatment team in a rehabilitation setting, but they also encounter ancillary staff within a facility. Therefore, it would also be beneficial to study interactions between patients and staff positions such as custodians, dietary staff, clerical staff, therapy assistants, etc. Perhaps a future study could examine use of strategies before and after facility-wide in-service. Doing this could determine whether specialized training in the use of strategies would, in fact, improve overall interactions between patients and staff.

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References


