HHS Public Access

Author manuscript

Brain Inj. Author manuscript; available in PMC 2015 September 03.

Published in final edited form as:

Brain Inj. 2011 ; 25(9): 844–857. doi:10.3109/02699052.2011.585507.

Selling the story: Narratives and charisma in adults with TBI

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Abstract

Objective—To examine storytelling performance behaviours in adults with traumatic brain injury (TBI) and relate these behaviours to perceived charisma and desirability as a conversation partner.

Design and methods—Seven adult males with traumatic brain injury (TBI) told their accident narratives to a male confederate. Ten male undergraduate students rated 1-minute video clips from the beginning of each narrative using the Charismatic Leadership Communication Scale (CLCS). Raters also indicated whether or not they would like to engage in conversation with each participant.

Results—Of the performative behaviours analysed, gestures alone significantly influenced CLCS ratings and reported likelihood of engaging in future conversation with the participant. Post-hoc analysis revealed that speech rate was significantly correlated with all of the preceding measures. There was a significant correlation between self- and other-ratings of charisma.

Conclusions—The findings suggest that aspects of non-verbal performance, namely gesture use and speech rate, influence how charismatic an individual is perceived to be and how likely someone is to engage in conversation with that person. Variability in these performance behaviours may contribute to the variation in social outcomes seen in the TBI population.

Keywords

Traumatic brain injury; conversation; communication; social behaviour; charisma

Introduction

Social communication impairments are common among individuals with traumatic brain injury (TBI) [1] and may contribute to negative social outcomes [2]. To date, most research on social communication has focused on narratives. Narratives are prevalent and important in daily conversation and tax linguistic, communicative and cognitive skills [3]. Thus, this genre provides a useful means with which to look at social communication skills in individuals with TBI. The current literature on narratives of individuals with TBI is limited, however, in that it has focused primarily on verbal aspects of performance, rather than

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***Declaration of Interest*:** This study was supported in part by funds from the Wisconsin Alumni Research Foundation, the Walker Foundation and NIDCD Grant T32DC005359. The authors report no conflicts of interest.

considering the performative aspects of telling a story, i.e. the 'acting' part of storytelling. Differences in performance may underlie previously unexplained differences in social and communication outcomes of individuals with TBI and could lead to a new direction in social communication rehabilitation. In this study, individuals with TBI shared a personal narrative that was analysed for performative features and rated by unfamiliar listeners on a measure of social communication. The purpose was to learn whether performance skills influenced others' perceptions of adults with TBI, as well as others' interest in conversing with them in the future.

Why study narratives?

Labov [4] described narratives as 'one method of recapitulating past experience by matching a verbal sequence of clauses to the sequence of events which (it is inferred) actually occurred' (pp. 359–360). A narrative is a genre of oral communication that has been defined as 'a representation in language of either real or imagined actions or events that unfold in time' ([8], p. 3). The stories that are shared allow one to articulate lived experiences [4, 6, 7], make sense of those experiences and enforce order [7], compose social identity, increase social closeness, demonstrate communicative competence and 'tell us who we are and who we can—or cannot—be' ([8], p. 267). Narratives have long been studied among individuals with communication disorders ranging from language and learning disorders in children [9, 10] to acquired cognitive-communication disorders in adults [11]. The narrative as an assessment tool can be valuable in detecting competencies that may be missed by standardized measures, capturing communicative performance and demands in real-world contexts and detailing changes in these competencies over time [12]. Narrative types commonly assessed in the current TBI literature include retelling a previously heard, read or seen story; creating a story based on a picture or sequence of pictures; or telling a story based on a personal experience [5].

Among narrative types, personal-event narratives are a sort of juxtaposition between story retelling and story generation, and thus provide a unique medium of study. A personal-event narrative is defined as a recounting of a sequence of events derived from the biography of the storyteller [13]. When compared to other types of narrative elicitation, personal-event narratives are thought to be more representative of extemporaneous communication and pragmatic skills and provide a more precise account of functional communication than do narratives from picture prompts or retelling stories [9]. People also produce more, longer and more grammatically complex utterances in personal-event narratives compared to genres such as story retelling [14, 15].

A unique type of personal-event narrative is the 'Danger of Death' story. In studies by Labov [4, 13] and Labov and Waletzky [16], participants were asked, 'Were you ever in a situation where you were in serious danger of being killed?' If the participant responded positively, the interviewer would ask what happened ([4], p. 354). Although interview techniques in general have been regarded as over-structured and lacking spontaneity [6, 17], Labov [4] asserted that the 'Danger of Death' question overcame the limitations of face-to-face interviews because of the emotional involvement of reliving the experience.

Most people with TBI have a remarkable 'Danger of Death' story: the account of their accident. Among members of the TBI population, these narratives can give meaning to an individual's sense of self, which changes dramatically following the injury [18]. This life-changing story is quite individualized and often has strong emotions associated with it. Coelho [14] declared that story-generation is more challenging than story retelling for both disordered and non-disordered individuals and thus is likely to reveal impairments; however, Van Leer and Turkstra [15] asserted that this 'accident narrative', because of its familiar context, frequent recounting and minimal demands on organization, creativity and memory, is less complex than other types of story-generation and thus might display 'optimal narrative ability'.

Narrative studies in TBI

Previous studies of narratives in children and adults with TBI have focused on both microstructural (word-level) elements and also macrostructural (idea- or story-level) elements. In regard to the former, studies have shown that phonological, lexical, semantic and syntactic elements do not differ significantly between individuals with TBI and peers without brain injury [14, 19-23], unless the injury is severe and sustained early in language development [24]. In contrast, individuals with TBI have been found to speak at a significantly slower rate when producing narratives [25-27] and to also be more dysfluent, producing significantly more mazes, hesitations, pauses, false starts, repetitions and fillers than uninjured peers [19, 25-27]. Individuals with TBI tend to produce shorter narratives, with respect to content units [25], *T*-units (roughly equivalent to an utterance) [14, 27] and implicit propositions [19]. Coelho [14] and Coelho et al. [12] also found that individuals with TBI produced significantly fewer words and propositions per *T*-unit.

Individuals with TBI may provide inaccurate information in their narratives [25, 26], depending on the task. Tucker and Hanlon [28] found that individuals with mild or moderate TBI differed significantly from controls in the accuracy of a narrative generated from a series of pictures, although there were no significant differences between the mild and moderate TBI groups. Jones et al. [29] also found that accident narratives produced by individuals with TBI were characterized by significantly more confusion, defined as uncertainty about the memory of events, than those produced by individuals without TBI.

Common targets of macrostructural analysis in the literature include cohesion (the connection of words to their referents), coherence and story grammar. Reports of impairments in use of cohesive ties by individuals with TBI are inconsistent across the literature. Some researchers have found that individuals with TBI use fewer cohesive ties than controls [22, 25, 26, 30, 31], whereas others have found no group differences [32, 33]. Still others have found task-dependent effects, such as group differences in spontaneous narrative generation but not in story retelling [14, 23, 34, 35], group differences in narrative discourse but not in conversation [30] and individual differences in personal-event narratives vs current-event narratives [15]. Individuals with TBI have shown deficits in coherence when compared to controls, with larger differences in global coherence (the relation of each sentence to the overall topic) than local coherence (the relation of adjacent sentences to each other) [32], although task influences have been found here as well (story generation vs

retelling and personal-event narrative vs current-event narrative) [15, 34]. Findings in regard to story grammar also appear to vary according to the task. Liles et al. [23], Coelho [14] and Coelho et al. [21] found no significant between-groups difference in complete episodes in a story-retell task, but individuals with TBI produced fewer episodes than controls in a story-generation task. In personal-event narratives, which might have included 'Danger of Death' stories, Biddle et al. [19] found that individuals with TBI omitted significantly more implicit propositions than did controls.

Although the literature to date has methodological limitations, when taken together the findings suggest that many individuals with TBI have deficits in the fluency, accuracy, cohesion, coherence and structuring of narratives, especially those that were self-generated vs re-told. This literature, however, seems to be lacking in analysis of an even higher-level, paralinguistic structure: the *performance* of the narrative. Studies reviewed to date have focused mainly on the *what* of spoken language: its content and organization, rather than *how* information is presented. The element of 'how' typically is considered within the domain of pragmatic aspects of language—i.e. how language use is shaped by context factors such as the type of social interaction or the perceived status of the interlocutor. Non-verbal behaviours typically are not included in these studies and when they are the focus typically is on microscopic analysis of discrete non-verbal behaviours like eye gaze or body posture [36, 37] and these have not differed systematically between groups. Also, studies of social communication outcome after TBI [2, 38, 39] reveal significant variability that is not accounted for by pragmatic language use, and group differences in social outcomes are seen even when adults with TBI are indistinguishable from uninjured peers on traditional narrative measures [40]. This suggests that other factors might influence social communication outcomes after TBI. Among these factors, one narrative element that might be important but has not been studied is *performance*.

Performance

In 1973, Naftulin et al. [41] hypothesized that student ratings of educators depended more on the educator's personality traits than on actual content covered, so that in a new learning experience, students could effectively be seduced into perceiving they had learned something from a lecture that had little content. The authors hired an actor to portray a fictitious character, Dr Myron L. Fox, and give a lecture titled, 'Mathematical Game Theory as Applied to Physician Education'. The lecture was designed to have 'excessive use of double talk, neologisms, non sequiturs and contradictory statements' (p. 631) and to be given with 'parenthetical humour and meaningless references to unrelated topics' (p. 631). The actor presented his lecture to a group of 55 psychiatrists, psychologists, social work educators, psychiatric social workers and administrators, who were enrolled in a graduate-level educational philosophy course and who subsequently completed a satisfaction questionnaire based on the content and delivery of the lecture they just heard. There were significantly more favourable responses than unfavourable, leading the authors to conclude that it was possible for an adept performer to delude even professional educator-students into the perception of having learned [41]. This phenomenon has been referred to since then as the 'Dr Fox Effect'.

Ware and Williams [42-45] and Perry et al. [46] recreated the original Dr Fox study by videotaping lectures that varied in the level of the instructor's expressiveness and amount of content covered. In these studies the authors manipulated factors such as monetary compensation and whether the participant knew he or she would be tested on the content, and the results showed how important the Dr Fox effect may be in the specific context of a narrative. Overall, the authors found that the instructor's expressiveness had a significant impact on student ratings of teacher effectiveness but not on student achievement, whereas lecture content had an impact on achievement but not ratings [47]. The greatest effect on ratings was seen when there was no external motivation to learn, such as money or testing [48]; that is, the instructor's performance had the greatest effect in contexts most like everyday narratives: where the interlocutor is not being either paid to listen or tested on the content. Thus, in this context, the interlocutor's perception might be more influenced by the speaker's expressiveness than by what is actually being said.

The notion of 'expressiveness' is challenging to define in the context of conversation. One term that might capture this concept is *charisma*. The word charisma is derived from an Ancient Greek word meaning 'gift of grace' [49] and is explained in the leadership literature as 'some extraordinariness granted a leader by his or her followers' [50]. In a study of charismatic leadership, Holladay and Coombs [51] hypothesized that a leader's delivery and communication style correlated with followers' perceptions of that leader's charisma. The researchers created videotapes of staged staff meetings in which confederate 'supervisors' used one of two different delivery styles: strong, with the speaker maintaining eye contact and using free and natural gestures, facial expressions and pitch alterations and no unnecessary hesitations (i.e. maintaining vocal fluency); and weak, with the speaker looking at written notes of the speech (i.e. avoiding eye contact), using few facial expressions and speaking in a monotone voice with intermittent dysfluencies. The videotapes were shown to students, who then rated each 'supervisor' on the charisma items of the Multifactorial Leadership Analysis [52] and Norton's [53] communicator style questionnaire. Holladay and Coombs [51] found that respondents exposed to the strong style of delivery rated the speaker as demonstrating a more charismatic style of leadership than those exposed to the weak style of delivery. They also found that speakers with the strong style of delivery were perceived to exhibit more dominance, animation, openness, friendliness, drama and attentiveness [51] (see [53] for definitions of these characteristics).

Studies of the Dr Fox Effect and charismatic leadership raise questions about the performance aspects of interpersonal communication, particularly in relation to narratives. Labov [13] described a storyteller as 'someone who can make something out of nothing, who can engage our attention with a fascinating elaboration of detail that is entertaining, amusing, and emotionally rewarding' (p. 396). Langellier [8] also asserted that 'a story implies storytelling' (p. 249) and that examination of narratives from a performative approach allows one to assess the way in which a story is told (i.e. performed) and the effect it has on its audience, which is central to the performance. This approach simply asks, 'is this account of personal experience performed or not?' ([8], p. 255). Narrative performance devices might include the use of direct speech, asides, repetition, expressive sounds, sound effects and motions and gestures [17]. These bring life to the narrative, making it more

persuasive and granting the narrator the ability to highlight important story elements and express his or her attitudes and opinions [6]. They also might influence the listener's desire to interact with that person in the future.

To capture performance aspects of communication, Peterson and McCabe [3] introduced the concept of 'sparkle': features that emote the 'freshness, the creativity, the unpredictability, the amusement, the raw edge of ordinary life' (p. 1). They proposed that sparkle features may go undetected by traditional narrative analyses and that the exact same narrative could be performed in different manners, giving rise to different social outcomes. To date, only two studies have examined sparkle features in narratives. Newman and McGregor [54] studied oral narratives of children with Specific Language Impairment (SLI) and their typically-developing peers as a part of a communication quality judgement. They asked teachers and laypersons to rate 20 students telling a story from a wordless picture book, using measures of vocabulary, story grammar, syntax and fluency, as well as sparkle, which they defined as 'the degree to which the story charms and engages the listener' (p. 1032). For both teachers and laypersons, particularly the latter, perceptions of overall narrative quality were correlated with ratings of sparkle.

Mills et al. [55] operationalized sparkle characteristics as rhetorical features, consisting of idiomatic expressions, digressions and prosodic manipulations. These features were derived from both Western models of performance and also notions of performative style from West-African and African-American cultures. The authors analysed rhetorical features in narratives produced by African-American students in gifted vs general-education classrooms, with fictional narratives elicited by a wordless picture book and personal narratives elicited using the conversation map technique outlined by Peterson and McCabe [3]. Sparkle measures were compared between groups and also related to students' and teachers' perceptions of a good storyteller. There were no significant differences in use of sparkle features between gifted students and those in general education classrooms, but children in both types of classrooms used significantly more rhetorical features in personal narratives than fictional narratives. The authors also found that both students and teachers perceived good storytellers to be those who used rhetorical features such as direct-reported speech, embellishment and figurative language. Relevant to the earlier discussion of microstructural vs macrostructural elements in narratives, there were few significant correlations between performance measures and scores on standardized language tests.

In sum, several aspects of narrative performance have been shown to correlate with listener satisfaction and perceived charisma, communication quality and storytelling ability. Performative abilities appear to be relatively independent of formal language measures such as syntax and semantics and can be measured reliably. Thus, measurement of performance features could provide a new perspective on communication abilities of individuals with TBI.

Current study

Literature from other populations suggests that the quality of a person's narrative performance can positively influence others' perceptions of them. If this finding holds true in the TBI population, it could be seen as a positive influence on rehabilitation, as

performative abilities might compensate for impairments in micro- and macrostructural elements of narratives and might be associated with higher overall ratings of communicative competence. Ultimately, charisma may be a motivating factor for an interlocutor to enter into or continue a social engagement.

The study questions were as follows:

(1) Do performative measures in narratives correlate with observers' perceptions of the charisma of adults with TBI?

(2) Do performative measures in narratives correlate with self-perceptions of charisma? Self-appraisal is important in rehabilitation and could help indicate whether performative behaviours could be taught.

(3) Do self-perceptions of charisma correlate with observers' perceptions? As in the previous question, the answer to this would provide information about self-awareness that could be useful in rehabilitation.

It was hypothesized that the more performative behaviours participants used in recounting a personal-accident narrative, the higher they would be rated by others on a measure of perceived charisma and the higher they would rate themselves the same measure. It also was hypothesized that participants with TBI would rate themselves higher on a measure of charisma than would outside observers, because of a lack of awareness of their deficits [56-63].

Methods

Participants

Participants were seven males who sustained a TBI during adulthood and more than 1 year prior to the study. Participant characteristics can be found in Table I. Participants were included if they spoke English as their native language (by self-report), and were excluded if they had a pre-morbid history of neurological disorder or learning disability (by self-report) or scored in the aphasic range on the Western Aphasia Battery (WAB) [64]. Participants with TBI were administered the Repeatable Battery of the Assessment of Neuropsychological Status (RBANS) [65] as an overall measure of cognitive status. Conversations were rated by 10 undergraduate males who had never met the participants with TBI and who had a mean age of 19.4 years. Raters had no history of TBI and spoke English as their native language, by self-report. They were enrolled in an Introduction to Speech-Language Pathology course and had majors outside of the field of communication disorders. Females were excluded from this study to eliminate any possible effects of gender on conversations or ratings.

Narrative elicitation procedure

The narrative elicitation procedure had two components: an extemporaneous conversation and the TBI 'Danger of Death' story or accident narrative. Both types of narratives were elicited in a conversation with an adult male confederate. The confederate was trained to produce scripted comments and back-channel responses in conversation and show

consistently neutral affect across participants. This was verified by visual inspection of the videos by the first author. The procedure began with an adapted version of the Relationship Closeness Induction Task (RCIT) [66], a structured procedure designed to encourage relationship closeness in a laboratory setting. The RCIT consists of three lists of questions that become increasingly personal (see Appendix A) and was used so that the participant would feel comfortable with the confederate and accommodate to the camera before recounting his accident narrative. The participant and confederate were given 2 minutes to discuss List I, 3 minutes on List II and 5 minutes on List III, adapted from the procedure developed by Sedikides et al. [66]. The researcher (the first author) stated the following to the participant and confederate:

> Use these questions as conversation starters. You don't have to go in order of the list or answer all of the questions, and it's okay if you stray from these exact questions. I will be back in a couple of minutes to give you the next list.

The researcher then left the room. After the RCIT was completed, the researcher returned to the room and said:

> You've both been asked to come here because you have been in an accident. I want you now to talk about your accident and the events leading up to it. You will not be timed.

The researcher then flipped a coin to determine who went first. If the confederate won the coin toss he was given the choice to share his story first or second and he always chose second. If the participant won the coin toss he was told that this meant he would share first. This was to ensure that the participant always shared his story first, so his storytelling performance was not biased by that of the confederate. The researcher then left the room while the participant and confederate were sharing stories. The conversation was videotaped with two cameras, one facing the confederate and one facing the participant. All procedures were approved by the local institutional review board.

Measures

Performance measures—The conversations were transcribed using Codes for the Human Analysis of Transcripts (CHAT) [67] and divided into terminable units (*T*-units). A *T*-unit was defined as one main clause plus any attached or embedded subordinate clauses and/or non-clausal structures [68].

The first minute of each participant's narrative was used for analysis. The length of stories collected ranged from 1 minute 30 seconds to 40 minutes. The first minute of each story was used in data analysis, to prevent a confound of story length. One-minute clips were sufficient for the study purposes, as previous research has shown that people's judgements can be quite accurate even when given very brief exposure [69]. Video clips were edited to remove the confederate and excess background footage from the frame, ensuring the focus was on the participant.

Narratives were analysed using measures adapted from Mills et al. [55] and included tonality, sound effects, gestures and audience engagement. Tonality was defined as the use of intonation, rhythm, direct-reported speech and elongation of vowels [70]. Sound effects

were defined as ‘non-speech sounds used to amplify action in the story’ ([55], p. 15). Gestures were defined according to Krauss et al.’s [71] classification of conversational gestures. Krauss et al. [71] proposed a continuum of gesture types by degree of lexicalization. At the lowest end of the continuum were adapters, which ‘consist of manipulations either of the person or some object (e.g. clothing, pencils, eyeglasses)—the kinds of scratching, fidgeting, rubbing, tapping and touching that speakers often do with their hands’ (p. 392) and are ‘not communicatively intended’ (p. 392). At the highest end of the continuum were symbolic gestures, which are ‘used intentionally and serve a clear communicative function’ (p. 393) (such as thumbs up). Conversational gestures fall in the middle. They temporally accompany speech, seem to be related to the speech they accompany and are made by only the person who is speaking. These include motor movements, which are ‘simple, repetitive, rhythmic movements that bear no obvious relation to the semantic content of the accompanying speech’ (p. 394) and which, in general, are temporally associated with stressed syllables; and lexical movements, which are ‘hand movements that vary considerably in length, are non-repetitive, complex and changing in form and, to a naïve observer at least, appear related to the semantic content of the speech they accompany’ (p. 394). Any gestures that were necessary to comprehend the spoken phrase (i.e. ‘I hit this side’, along with pointing to the right shoulder) were also excluded from analysis. Audience engagement was defined as instances ‘when the narrator asked a question of the examiner that related to the story … asked the examiner to carry out a task that would move the story forward or commented about the happenings of the story to the examiner’ ([55], p. 14).

Data on performative features were collapsed into two summary measures in the same fashion as Mills et al. [55]: a performative density measure (PDM) was calculated by dividing the tokens of performative features by the total number of utterances; and a performative diversity (PDiM) measure (analogous to a type-token ratio) was calculated by dividing the types of performative features by the total number of utterances. Formal language measures, including total number of utterances (in *T*-units), total number of words, lexical diversity by type/token ratio (proportion of different words [types] to total words [tokens]), mazes (fillers, repetitions, reformulations), syntactic position errors and speaking rate (words/minute) were also collected to ensure that differences on these measures did not confound the interpretation of performance data.

Perceived charisma ratings—Raters watched the seven 1-minute video clips in a randomized order. After watching each clip, raters evaluated that participant using an adapted version of the Charismatic Leadership Communication Scale (CLCS), a 15-item, Likert-type leadership measurement scale that focuses on communicative behaviours associated with charisma (see Appendix B). The CLCS was based on an exploratory study [72] that identified five unique categories of behaviour associated with charisma: (1) an outgoing personality; (2) the ability to listen, empathize with and understand others; (3) the ability to speak well, demonstrate a sense of involvement and be poised, charming, and understanding; (4) the ability to successfully use non-verbal communication attributes, including eye contact and a genuine speaking style, funny; and (5) the skills to be powerful yet understanding and enthusiastic and put others at ease. These findings served as the basis

for the scale. In the exploratory study, a preliminary version consisting of 42 items was administered to 46 adult participants who were asked to rate behaviours that were important in an organizational leader and manager. Twenty-two items were removed to improve the reliability and the resulting 20-item scale was administered to 64 additional adult participants. Five additional items were eliminated, resulting in the final, 15-item scale (lowest possible score = 15, highest possible score = 75).

Two additional measures were collected for exploratory purposes. First, at the conclusion of the study, raters were asked to rank participants in order from most to least charismatic (1 = most, 7 = least). This second measure of charisma would provide information about the construct validity of the CLCS, given that it was a novel scale. To do this, raters were shown 5-second clips of the 1-minute videos they had seen, in a random order, and then were presented with photographs of participants arranged in the order that the clips were seen. This allowed raters to physically manipulate representations of the participants in order to rank them against each other, to reduce the working-memory demands of the task. The photographs were created from video frames wherein participants (a) were not giving eye contact to the confederate, (b) had a neutral facial expression and (c) had their hands at their sides. This was done so that expressiveness would be equivalent across photographs, so that raters were not biased by the image chosen. Secondly, raters were asked: 'Would you wish to engage in a conversation with the participant? Why or why not?' This expanded on the charisma ratings, attaching them to a potential social outcome, and added a qualitative aspect to this study.

Self-perception measure—Each participant rated his own charisma using the CLCS. Participants completed the CLCS after their conversation with the confederate, so that they were not conscious of their expressiveness during the elicitation procedure.

Qualitative analysis

Raters' answers to the question about future engagement in conversation were analysed using the inductive analysis procedure proposed by Emerson et al. [73]. An initial open coding was performed on all 70 responses (seven raters × 10 participants) and 14 responses (20%) were identified as having the most substance. A focused coding was done on these responses, which resulted in the identification of themes and the 56 remaining responses were coded for these themes.

Reliability

All transcripts were analysed by the first author and a trained graduate student re-transcribed and recoded two of the seven videos (29%). Inter-rater reliability was 95% for *T*-units, 91% for gestures and 89% for PDM and all disagreements were resolved by discussion. PDiM and other performance measures were not used in data analysis, for reasons described below, so reliability data were not collected for those measures.

Data analysis

Spearman rank-order correlations were used to test the study hypotheses. Four dependent variables were entered into data analysis: PDM, PDiM and self-ratings (CLCS-S) and other-

ratings (CLCS-O) of charisma. A family-wise Bonferroni correction for alpha-slippage was applied for each set of correlations. Thus, criterion *p*-values were 0.05/3 = 0.02. As this was an exploratory study, this more relaxed correction for alpha slippage was considered acceptable.

Results

Summary scores for the performance and charisma measures are listed in Table II. CLCS-O scores were significantly correlated with total number of utterances (ρ=0.88, p<0.01) and total number of words (ρ=0.86, p=0.01). No other formal language measure was correlated with CLCS-O (type-token ratio: ρ=−0.29, p=0.53; and mazes: ρ=−0.04, p=0.94). Neither participant age (ρ= −0.32, p=0.48) nor time-post injury (ρ=−0.43, p=0.34) was correlated with CLCS-O. There were no instances of direct-reported speech or sound effects in the 1-minute samples shown to the raters, so they were excluded from further analysis.

PDiM

PDiM scores were not significantly correlated with either CLCS-O (ρ= −0.22, p = 0.63) or CLCS-S (ρ= −0.17, p = 0.72) scores. In this study, PDiM did not capture what its equivalent did in Mills et al. [55], perhaps due to the small number of possible performative behaviours (gestures, tonality, audience participation) and the limited sample size. This point is illustrated by the PDiM measures of Participants 2 and 6 (0.14 and 0.15, respectively). Participant 6 exhibited fewer types of performative behaviours (tonality and gesture) than Participant 2 (tonality, gesture and audience engagement), but his low number of utterances (13 vs 21) inflated the calculated PDiM, so it appeared that he used a greater diversity of performative behaviours. PDiM was therefore excluded from all further analyses.

PDM, CLCS-O and CLCS-S

There was no significant correlation between PDM and CLCS-O (ρ=0.79, p=0.04) or CLCS-S (ρ=0.76, p=0.05). CLCS-O and CLCS-S were significantly correlated (ρ=0.90, p=0.01), so subsequent analyses focused only on CLCS-O.

Gestures, charisma rankings and interest in conversation—Inspection of the data suggested five follow-up questions that were addressed in post-hoc quantitative analyses. A family-wise Bonferroni correction for alpha-slippage was applied for each set of correlations. Thus, the criterion *p*-values were 0.05/5 = 0.01.

First, there appeared to be variability across participants in the amount of gestures used, so gestures were separated out from PDM and analysed in relation to CLCS-O. Gestures were significantly correlated with CLCS-O (ρ=0.96, p<0.01). This appeared to be unrelated to participants' level of cognitive function, as there was no correlation between CLCS-O and RBANS scores, ρ=−0.18, p=0.70. Use of tonality was not significantly correlated with CLCS-O (ρ=0.82, p=0.15), although audience engagement was (ρ=0.95, p<0.01). As gestures seemed to account for most of the correlation between performative behaviour and CLCS-O, all subsequent analyses included gestures only.

The second and third questions were whether use of gestures and others' charisma ratings predicted others' charisma rankings. That is, when ranking the participants against each other, were raters influenced by participants' performance and their own prior ratings? The data suggest that this was the case: CLCS-O scores were significantly correlated with participants' mode rankings of charisma (ρ= −0.91, p<0.01), while the correlation of gestures with charisma rankings approached significance (ρ= −0.84, p=0.02).

The fourth and fifth questions were whether gestures and others' charisma ratings predicted the percentage of people who wanted to talk to each participant. In other words, when asked if they would like to engage in conversation with participants, were raters influenced by specific features of participants' performance and/or their overall perceptions of that participant's charisma? Both CLCS-O and use of gestures were significantly correlated with the percentage of raters who indicated that they would engage in conversation with each participant (CLCS-O, ρ=0.91, p<0.01; gestures, ρ=0.96, p<0.01).

Qualitative results and exploratory analyses—Open and focused coding was used to identify themes in raters' responses to the question about wanting to converse with that person in the future. Reasons for wanting—or not wanting—to converse with a given participant in the future could be grouped into the following themes: (a) the participant's communicative abilities, (b) his performative behaviours, (c) story characteristics, (d) his perceived overall impairment,† (e) the participant's impact on the rater and (f) the participant's apparent internal state of mind. Constructs comprising each theme and examples of comments can be found in Table III.

Prosody and speaking rate were often mentioned in raters' rationales for wanting to engage in future conversations with a given participant. Thus, these two aspects of speech were analysed quantitatively to explore their relation to perceived charisma. Pitch variability was measured by separating the audio track from the 1-minute video clips, editing out the confederate's back-channel responses and calculating pitch range in Hz using a Visi-Pitch IV, Model 3950. Pitch was not correlated with scores on the CLCS-O (ρ= −0.32, p=0.48) or the percentage of raters who would want to talk to that person in the future (ρ= −0.11, p=0.82). Speaking rate was significantly correlated with gesture use (ρ=0.93, p<0.01), CLCS-O (ρ=0.96, p<0.01) and also the percentage of raters interested in conversing with that person in the future (ρ=0.85, p=0.01).

Discussion

The present study integrated constructs and analysis approaches from different disciplines to examine social communication outcomes following TBI. This led to the hypotheses that individuals with TBI who used more performative behaviours in their accident narratives would receive higher self- and other ratings of charisma and also be more likely to be considered as conversation partners in the future.

†Although raters were not told that participants had sustained a TBI, the story itself revealed this information.

Overall, results were consistent with the Dr Fox literature: that is, the more performative features an individual displayed, the higher he was rated on a measure of charisma. This suggests that third-party observers are sensitive to aspects of non-verbal behaviour when making interpersonal judgements. A similar result was found by Maricchiolo et al. [74], who investigated gestures' influence on perceived speaker persuasiveness. These authors presented videos of speakers giving the same message with five different types of gestures and they found that the use of ideational and conversational gestures (similar to Krauss et al.'s [71] lexical and motor movements, respectively) was associated with higher ratings of message persuasiveness, communicator style effectiveness and speaker composure than object-addressed non-lexical movements, self-addressed non-lexical movements and no gestures. Undergraduate raters watched a single condition then rated that speaker on message persuasiveness, speaker communication style effectiveness and speaker composure and competence. A second experiment using only the audio portions from the different conditions revealed no significant effects of gesture condition on the dependent variables, suggesting that differences in the first experiment were related to visual cues and not acoustic characteristics of the accompanying speech. This study confirmed that listeners' impressions are influenced by a speaker's gestures, whether listeners are cognizant of this or not.

In the present study, raters also were asked to rank participants from most to least charismatic, as a measure of construct validity for charisma judgements. Rankings and ratings were highly correlated, suggesting that raters were using the scale appropriately. Gestures, however, although highly correlated with CLCS-O ratings, were not significantly correlated with charisma rankings. This correlation approached significance, so there might have been a significant correlation in a larger sample.

There was a significant correlation between self- and others' ratings of charisma for these participants. This suggests that participants had an accurate perception of their behaviour as rated by the CLCS. This result was somewhat surprising given the widespread finding in the literature that self-awareness is impaired in individuals with TBI [56-63]. Long-term outcome studies show, however, that awareness of deficits is most impaired in the acute stage post-injury and improves over time [75, 76]. Participants in the present study were 2 or more years post-injury and thus were likely to have made gains in self-awareness. A similar result specifically for communication judgements was reported by Douglas [77], who found that participants with TBI who were more than 2 years post-injury and their relatives agreed in their judgements about participants' pragmatic behaviours, indicating relatively accurate self-appraisal at this chronic stage post-injury. This might be a useful consideration in intervention, as awareness of deficits is a key consideration in management of social communication problems post-injury [78].

When asked to provide a rationale for their likelihood of wanting to engage the participant in conversation in the future, raters commented on a variety of different aspects of the narratives. It was interesting that raters made inferences about participants' mental states, theory of mind (i.e. ability to read others' thoughts) and cognitive abilities, in addition to noting specific behaviours, based on only 1 minute of conversation. While some comments might have been influenced by the wording of the CLCS questions, which participants had

just completed, the speed with which they made these judgements was remarkable nevertheless. This is consistent with previous research showing that adults establish quick impressions in social interactions [69]. Raters' comments, however, should be interpreted with caution. Previous research has shown that when it comes to social judgements what raters say is not entirely what they do [79], which one might expect given the implicit nature of many social judgements [80]. Thus, while introspective comments from communication partners are useful, they might not be the best basis for setting treatment goals.

Although it was not originally identified as a dependent variable, speaking rate appeared to influence raters' perceptions. This has been reported in previous studies of typical adults, in which fast speakers were rated as more knowledgeable and persuasive [81]; more competent [82]; more expressive, less hesitant and wavering and more favourable overall [83], when compared to slower speakers. Slower speakers, on the other hand, have been rated as less credible, truthful, fluent, emphatic, serious and persuasive and more passive than faster speakers [84]. Stewart and Ryan [83] also found that older, slower speakers were viewed less favourably than younger, slower speakers. It is not clear whether these data reflect differences in articulation rate or word fluency (e.g. slow production of individual speech sounds vs pauses between words or phrases), a distinction that might be important in TBI given that the two processes can be affected relatively independently. Typical conversational speech rates in adults have been reported to fall between 160–200 [85], 160–307 [86] and 152–170 words per minute [87]. Four speakers in the present study (Participants 1, 2, 4 and 7) were within these ranges of conversational speech. The other three (Participants 3, 5 and 6) were below the lowest values and also had the slowest rates of speech and received the lowest CLCS-O scores. Speech rate was correlated with gestures, however, and this study was not designed to determine which of the two was more influential.

The question of whether or not someone would want to engage in a conversation with each participant was an attempt to get at the big picture: whether performance and charisma judgements might influence an individual's potential for social engagement after brain injury. Both CLCS-O scores and gesture use were strongly associated with reported likelihood of engaging in a conversation with each participant. These findings have implications for long-term outcome, as individuals with relatively preserved performative abilities may have better social interactions and perhaps a better perceived quality-of-life.

This study was dyadic in nature: both the groups of individuals with TBI and the raters can be considered participants. Future research could involve examining performative behaviours in individuals with TBI with varying cognitive and communicative abilities and stratifying each group according to characteristics such as age, sex and socioeconomic status.

Limitations

Several limitations must be taken into consideration when interpreting the results of the current study. First, this small and same-sex sample of seven participants and 10 raters restricts the extent to which the results can be generalized to the population at large. Other studies have also been small, though, and have produced similar results [11, 15, 25, 26, 30-34], supporting the importance of considering performance and charisma when

evaluating social interactions. Furthermore, these seven participants were relatively high-functioning, which may have contributed to the high correlation of self- and others' perceptions of charisma. Future studies should include participants with a broader spectrum of impairment.

Secondly, the experimental setting, though enhanced by the use of a 'warm-up' chat with the RCIT, was still laboratory-based and unnatural. It may not be often that someone shares his or her accident narrative in the second conversation with a new communication partner, after being prompted to do so by an outside party. Individuals with TBI, however, are known for sharing intimate personal stories with relatively unfamiliar listeners, often in the first few minutes of meeting them, so this might in fact be a reasonable facsimile of a daily communicative interaction for this group.

A third limitation was the topic selected, which could be described as negative and might have offered a limited opportunity for performance. This could explain the limited diversity of performative behaviours, as compared to Mills et al.'s [55] rhetorical features. Perhaps a narrative with a different theme would elicit a more expressive performance. As noted above, however, the accident narrative is a common and meaningful story for persons with TBI to tell, so it provides some insight into a common communication act in this group.

A fourth potential limitation was the length of the narrative sample, which was set at 1 minute to accommodate the shortest narrative. It would be interesting to observe raters' reactions to more extended narratives, as these would provide more information on which to base judgements and might reveal macrostructural elements or pragmatic deficits common to TBI, such as digression, perseveration or social inappropriateness. While people might adjust judgements about their interlocutors as the conversation progresses, it is not clear that extended exposure can counteract first impressions and thus the data collected here were important.

A final potential limitation was that raters may have used more than the non-verbal behaviours coded here to make their judgements about charisma. Participant age, time post-injury and formal language measures other than speaking rate were not correlated with perceptions of charisma, but other characteristics could have contributed, such as the participant's appearance or body posture. For example, some raters mentioned differences in eye contact across participants, which could have affected ratings. These other non-verbal behaviours in conjunction with gestures and speaking rate would be worth studying in the future. However, as self- and other's perceptions were highly correlated, whatever participants and raters were using to determine charisma, they appeared to be using it in the same way.

Conclusion

The present study provided initial evidence that the manner in which an individual with TBI performs a story influences how charismatic others perceive him or her to be. Performance aspects of narratives also influenced the likelihood that someone may want to engage in conversation with that individual, suggesting that this is a potential contributor to differences in social outcomes among individuals with TBI. Individuals with TBI and naïve observers

agreed on performative quality ratings, which suggests a possible avenue for intervention. The study provides a new perspective on communication function in individuals with TBI, linking micro- and macro-structural perspectives on storytelling and showing a novel area in which skills may be revealed.

Acknowledgment

The authors wish to thank Dr. Julie Washington, Dr. Margarita Kaushanskaya, and Dr. Monique Mills for their support; Peter Meulenbroek for serving as a confederate; and Lindsey Byom for assistance with data analysis.

Appendix A: The Modified Relationship Closeness Induction Task (RCIT)

List I

(1) What is your first name?

(2) How old are you?

(3) Where are you from?

(4) What is your highest level of education?

(5) What is your current occupation?

(6) What made you decide on your current occupation?

(7) What is your favourite thing about your current occupation?

List II

(1) What are your hobbies?

(2) What would you like to be doing in 5 years?

(3) What would be the perfect lifestyle for you?

(4) What is something you have always wanted to do but probably never will be able to do?

(5) If you could travel anywhere in the world, where would you go and why?

(6) What is one strange thing that has happened to you recently?

(7) What is one embarrassing thing that has happened to you recently?

(8) What is one thing happening in your life that makes you stressed out?

(9) If you could change anything that happened to you in high school, what would that be?

(10) If you could change one thing about yourself, what would that be?

(11) Do you miss your family?

(12) What is one habit you'd like to break?

List III

(1) If you could have one wish granted, what would that be?

(2) Is it difficult or easy for you to meet people? Why?

(3) Describe the last time you felt lonely.

(4) What is one emotional experience you've had with a good friend?

(5) What is one of your biggest fears?

(6) What is your most frightening early memory?

(7) What is your happiest early childhood memory?

(8) What is one thing about yourself that most people would consider surprising?

(9) What is one recent accomplishment that you are proud of?

(10) Tell me one thing about yourself that most people who already know you don't know.

Appendix B: The Charismatic Leadership Communication Scale (CLCS)

I observed that the participant

(1) Can empathize with others.

(2) Knows when to talk and when to listen.

(3) Is poised.

(4) Is a skillful speaker.

(5) Maintains eye contact during communication.

(6) Can put others at ease.

(7) Is enthusiastic.

(8) Uses powerful language.

(9) Is persuasive.

(10) Would be comfortable when speaking in a public setting (e.g. in front of a group of unfamiliar people).

(11) Understands what people want.

(12) Understands what people need.

(13) Smiles often.

(14) Asks others to share ideas.

(15) Asks others to share opinions.

Each item is rated 1 (strongly disagree) to 5 (strongly agree).

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Table I

Participant characteristics.

Participant	Age (years)	Years post-TBI	RBANS score[a]	WAB (AQ) score[b]
1	68	15	90	99.1
2	22	2	75	99.6
3	25	4	79	100
4	32	3	89	99.8
5	52	6	77	99.6
6	58	38	94	99.2
7	46	12	105	99.7

[a] Randolph [65]; Mean = 100, SD = 15.

[b] Kertesz [64]; Aphasia Quotient (non-phasic language) = 93.8 and above.

Table II

Quantitative experimental measures.

Participant	CLCS-O[a]	CLCS-S[b]	Rank[c]	Percentage of raters wanting to engage in conversation
1	55.50	61	2	90%
2	59.67	63	1	100%
3	42.22	50	7	60%
4	44.67	56	5	50%
5	39.22	40	5	50%
6	38.30	46	7	30%
7	45.67	50	3	60%

[a] Levine [72]; CLCS-O = Average rating by others on the Charismatic Leadership Communication Scale.

[b] Levine [72]; CLCS-S = Self-rating on the Charismatic Leadership Communication Scale.

[c] Mode of others' charisma rankings; 1 = most charismatic, 7 = least charismatic.

Table III

Qualitative themes and constructs.

Theme	Constructs	Examples
Communication abilities	Vocabulary	‘He had a very decent vocabulary’
	Speech patterns (articulation, rate)	‘He speaks too slowly and pauses too often’
	Ability to carry on a conversation	‘He is not a good storyteller’
	Storytelling ability	
Performative behaviours	Eye contact	‘[He] coordinated gestures with eye contact’
	Gestures	‘He leaned away from the interviewer’
	Body posture	
Story characteristics	Digression	‘[He] recalled a lot of his events the day of the accident’
	Coherence	‘He goes off on tangents often’
	Use of detail	
Personality	Personality traits	‘He seems to be an interesting, kind person’
		‘He seems very shy’
Overall impairment	Comments about the participant’s brain injury	‘He seemed to be fully recovered’
		‘It looks like no brain trauma has occurred’
Impact on the listener	Comments on how the participant’s behaviour affected the rater or confederate	‘He showed the listener that he cared about the question’
		‘I would fall asleep talking to him’
Internal state of mind	Emotions/mental states	‘He felt at ease’
	Past knowledge	‘He would have lots of insight on things’