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Self-Coaching: A Context-Sensitive, Person-Centred Approach to Social Communication After Traumatic Brain Injury

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Unsuccessful social communication after traumatic brain injury (TBI) is often a consequence of self-regulatory (executive function) impairments. The primary goal of this article is to describe an approach to intervention for individuals with self-regulatory impairments that is individualised, sensitive to context and to the role of everyday communication partners, and supported by personally compelling metaphors. After a brief review of the social communication outcome literature, an innovative approach to improving social competence is presented and illustrated. The article ends with a review of the evidence base for social skills and self-talk interventions.

Unsuccessful social communication is a common consequence of traumatic brain injury (TBI) and is often associated with self-regulatory (executive function) impairments. The primary goal of this article is to describe an approach to intervention for individuals with self-regulatory impairments that is individualised, sensitive to context and to the role of everyday communication partners, supported by personally compelling metaphors, and practised until automatically triggered by relevant contextual stimuli. After a brief review of the social communication outcome literature, self-coaching interventions are presented and illustrated. The article ends with a review of the evidence base for social skills and self-talk interventions.

Social Communication Problems After TBI

Virtually any combination of strengths and deficits is possible after TBI, depending on the nature, severity, and location of the injury. However, social communication problems are common in both children and adults, and are often associated with personality changes, including increases in negative behaviour and awkward or

impulsive social communication (see review by Ylvisaker, Jacobs, & Feeney, 2003). Among children and adolescents with severe TBI, estimates of *new persisting* behaviour and psychosocial problems (i.e., those not predating the injury) range from approximately 35% (Max et al., 1997) to a high of 70% (Costeff et al., 1985). Behaviour and psychosocial problems are also common among adults with TBI and remain at high levels at long-term follow-up (Baguley et al., 2006). *Pre-existing* behaviour and social interaction problems, common among both children (Cattalani et al., 1998) and adults (MacMillan et al., 2002), add to this already alarming total. The intensity of behaviour and psychosocial disorders has been associated in some studies with the severity of injury (Schwartz et al., 2003) and with preinjury problems (MacMillan et al., 2002).

Furthermore, behaviour and social communication problems are often judged by family members, teachers, employers, friends, and others to be the most problematic consequences of the injury (Brooks et al., 1987; Lezak, 1986). Poorly controlled behaviour and problematic social interaction have been linked to difficulty in family reintegration and educational, vocational,

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social, and avocational pursuits (Morton & Wehman, 1995; Perlesz et al., 2000; Taylor et al., 2002). Social communication and general psychosocial problems were found to be critical predictors of vocational failure and poor quality of adult life in two groups of young adults injured as children and followed into adult life (Cattelan et al., 1998; Nybo & Koskiniemi, 1999).

Aggressive, poorly controlled, or otherwise awkward social behaviour has been linked to disruption in a variety of frontal lobe or fronto-limbic circuits, often injured in TBI (Scheibel & Levin, 1997). The following neuropsychological hypotheses together explain many of the documented social-behavioural problems:

- **Disinhibition hypothesis** (Scheibel & Levin, 1997). Damage to orbito-prefrontal cortex results in impaired inhibition, with predictably negative consequences for social communication.
- **Somatic marker hypothesis** (Damasio, 1994). Damage in ventromedial prefrontal regions reduces the efficiency with which the individual can benefit from feedback and learn from the consequences of behaviour, thereby maintaining unsuccessful social behaviour despite negative feedback.
- **Impaired contingency learning and reversal learning** (Rolls et al., 1994). Damage to orbitofrontal areas results in awkward and disinhibited behaviour in part because the individual fails to respond to changes in behavioural contingencies.
- **Impaired access to social managerial knowledge units** (Grafman, 1994). Damage to prefrontal structures reduces access to 'managerial knowledge units' — the organising schemes that enable individuals to maintain organised and socially appropriate behaviour in complex or nonroutine situations.
- **Impaired social perception** (McDonald, 2005). Damage to prefrontal areas, in association with the amygdala, insula, anterior cingulate gyrus, and basal ganglia (right hemisphere more than left) results in difficulty interpreting the emotional states of others and 'reading' the nonliteral aspects of their communication. Difficulty interpreting sarcasm (and possibly other nonliteral meanings) and recognising vocal expressions of emotions is common in TBI and has a negative impact on social communication (Channon et al., 2005; Milders et al., 2003).

- **Deficient 'social editor'** (Brothers, 1997). Damage to a circuit that includes the orbitofrontal cortex, amygdala, anterior cingulate gyrus, and temporal poles results in difficulty 'editing' one's social behaviour due to difficulty reading social situations and interpreting the emotional states of others.
- **Working memory hypothesis** (Alderman, 1996). Lateral frontal lobe injury impairs working memory, resulting in inefficiency in on-line processing of complex social information.
- **Initiation impairment** (Barrash et al., 2000; Pennington, 1997). Damage to dorsomedial prefrontal structures may result in the individual knowing what to do in social situations, but not initiating behaviour unless prompted.

The goal of this section is not to argue for any particular combination of these possibilities for the population of individuals with TBI. Indeed, it is likely that varying combinations are involved in individual cases. Rather, the important points from an intervention perspective are that poorly controlled social behaviour is common after TBI and the self-coaching interventions described in this article can be molded to address these possible explanations for serious social disability.

Social-Communication Intervention

The self-coaching approach described in this section differs from traditional social skills intervention in several respects, including sensitivity to context variables, inclusion of everyday communication partners (ECPs) in the intervention and support plan, use of personally meaningful metaphors and symbols, and use of video rehearsal to both personalise the intervention and increase the number of learning trials.

Traditional Social Skills Intervention

Traditional social skills training (SST) is based on the assumption that the social interaction problems of individuals in need of the intervention are due largely to inadequately developed *knowledge* of relevant social rules, roles, and routines. Thus the primary goal of the service is to impart social knowledge, both declarative (*knowing that* certain behaviours are desirable in specific contexts) and procedural (*knowing how to* perform the behaviours). Many training programs have been developed on the basis of this fundamental and apparently unassailable premise: people who do not know how to behave in specific social circumstances need to be taught. Designed for children,

adolescents, or adults from culturally diverse backgrounds or with developmental disabilities, learning problems, or psychiatric disorders, the programs are organised around training groups within which the participants practise social behaviours considered relevant to their social success. Such training programs differ with respect to the degree to which they emphasise discrete trial training or social problem solving. However, the common thread is repeated practice in a socially decontextualised training setting.

Despite their apparently compelling logic, these programs have been disappointing in their effects for most of the studied populations (see discussion of evidence below.) However, even at the level of theoretical rationale, there exists a clear disconnect between traditional SST and the types of social interaction problems common after TBI. The success of traditional SST groups (including pragmatics groups typically led by speech-language pathologists) assumes that the participants (1) lack knowledge of relevant social rules, roles, and routines, (2) are motivated to change their social behaviour, (3) possess the capacity to transfer skills acquired in a training setting to varied real-world application settings, (4) modify their behaviour in response to planned contingencies, and (5) are reasonably self-regulated. Unfortunately, the profile of many individuals with TBI is the opposite of that suggested by these assumptions. With relatively damaged anterior brain structures and relatively preserved posterior structures, individuals with a common profile after TBI typically possess relevant declarative social knowledge, but are poorly regulated, have difficulty transferring social knowledge to daily living, respond inefficiently to behavioural contingencies, and may lack the motivation to change, particularly if the injury has reduced their awareness of their interactive social competence and the effects of their behaviour on others. Thus there is no reason to believe that traditional SST (or pragmatics training) holds promise for those individuals with TBI with the most common neuropsychological profiles. Nevertheless, many rehabilitation programs continue to offer traditional SST as a component of TBI rehabilitation.

Self-Coaching: An Alternative to Traditional SST Focused on Impaired Self-Regulation

Since the early 1980s, my colleagues and I have used self-coaching as a metaphor and set of procedures in TBI rehabilitation (Ylvisaker & Holland, 1986). Because TBI disproportionately

affects active young people who typically have personal experiences and positive associations with sports as participants or fans, the self-coaching metaphor yields insight into self-regulatory/executive system concerns and potential social strategies. Individuals who have self-regulatory impairment but who desire higher levels of success in their social, educational, and vocational lives often agree to organise themselves around self-coaching procedures ('plays'), despite possible opposition to other intervention approaches. I use the term 'play' to refer to an organised strategy or plan, such as that performed during a football match or other athletic contest.

The general goal of self-coaching is to improve playful goal-oriented and ultimately successful behaviour, while decreasing impulsive and reactive behaviour. Consistent with this goal, self-coaching interventions also help the individual construct a positive image of self associated with effective self-regulation/self-coaching and ultimately successful social and vocational pursuits. Self-coaching has its historical roots in the view that self-regulation is at its core self-regulatory self-talk, even if that self-talk is automatic and minimally conscious. This view goes back at least as far as Plato in his Socratic dialogues (*Phaedrus* and *Theatetus*), and has its 20th century roots in the cognitive psychology of Lev Vygotsky (1978).

As a psychological therapy, self-coaching most closely resembles cognitive-behaviour therapy and, more specifically, cognitive-behaviour modification (Meichenbaum, 1977), but with the important caveat that self-coaching is ideally an everyday, context-sensitive (versus clinic-bound) intervention, with 'plays' that also specify roles for everyday communication partners (ECPs). According to Berk (2001), this 'everyday routine' approach to self-regulatory self-talk is consistent with the views of Vygotsky, which were distorted when self-talk therapies became clinical interventions delivered in a manner insensitive to everyday contextual realities.

Self-coaching plays (including self-regulatory self-talk scripts) can be designed to address a variety of obstacles common after TBI: poorly controlled emotions, impulsive or otherwise ineffective social interaction, difficulty interpreting others' social behaviour and reading others' emotional states, difficulty managing everyday routines, problems at work or school, personal goals (e.g., sobriety, money management, hygiene, weight loss), and others. The key procedural concepts are:

- negotiate personally appealing and effective plays/scripts of self-regulation or interaction, designed to solve specific problems or overcome specific obstacles

TABLE 1

Principles of Self-Coaching as a Social Competence Intervention

Principle	Description
1. Automatic self-regulation:	The ultimate goal of self-coaching is to create situations in which relevant environmental cues automatically trigger effective self-regulatory/self-coaching thoughts and behaviours rather than triggering poorly controlled, impulsive, negative, unsuccessful, or self-destructive behaviour.
2. Participant involvement:	Self-coaching requires creative and respectful collaboration with the participants in identifying difficult situations and negative behaviours, personally meaningful goals, useful self-talk plays/scripts, and acceptable supports from others.
3. Specificity of real-world needs:	Self-coaching targets specific issues that have a direct and measurable effect on the quality of the individual's life.
4. Negotiation of scripts and metaphors:	Plays/scripts and metaphors are individually negotiated to be as personally meaningful as possible.
5. Motivating associations:	The self-regulatory plays/scripts should be creatively associated with motivating images, people, or other symbols of strength and success.
6. Self-coaching plays/scripts and communication partner scripts:	Ideally 'coaching' scripts are negotiated and developed for the individual (self-coaching scripts) and also for ECPs (e.g., how to cue self-coaching without eliciting oppositional responses).
7. Practice:	Automaticity of self-coaching 'plays' cannot be achieved without a great deal of practice. One of the reasons for video self-modelling is that many of these learning trials can be logged as the individual watches the video ('the game film').
8. Monitoring, revisions, and celebration:	The effectiveness of self-coaching plays must be carefully monitored, with revisions as necessary and ample celebration of success.

- associate those plays/scripts with compelling images, goals, heroes, and the like to make their meaning clear and personally appealing
- rehearse the plays/scripts repeatedly, possibly using video learning trials ('game films'), with the goal of automatic elicitation of the self-coaching play by natural everyday stimuli
- negotiate acceptable reminder plays or partner scripts that can be used by ECPs
- try the plays in real 'games' (i.e., real-world interaction) and evaluate their effectiveness and comfort level
- modify the plays or design new plays in the event of failure, frustration, or discomfort
- ensure celebration of everyday successes that result from using the self-regulatory, self-coaching plays/scripts successfully.

Principles of Self-Coaching as a Social Competence Intervention

Table 1 lists the principles underlying this self-coaching approach. All self-coaching interventions are organised within a general Goal-Obstacle-Plan-Do-Review framework (GOPDR). That is, participants are encouraged to

(1) describe what they want to accomplish or get better at (goal), (2) identify what is blocking successful achievement of that goal (obstacle), (3) create a play (plan), (4) try it under highly supported and then real-world conditions (do), (5) review what is working and what is not working, making modifications as needed (review).

Regular and explicit use of the GOPDR framework serves three purposes. First, it helps participants internalise this general thinking framework as a basis for self-regulation. Second, use of the GOPDR framework ensures that all interventions meaningfully address real-world problems. Third, the GOPDR framework creates a culture within which there is no failure. If a given self-coaching play does not work, the appropriate response is, 'Terrific! We have learned something very important. That doesn't work!! So we need to change it or try something else. Stick with winners; give up losers! Life is a series of adjustments!'

Automatisation: Self-Coaching Videos

Particularly for individuals with limited space in working memory and weak on-line decision making, habituating or automatising the self-coaching plays and scripts is critical. Furthermore, the plays need to be automatised within the settings

TABLE 2

Possible Content for Self-Coaching Videos

Content	Elaboration
1. Introduction to the concept and importance of self-coaching.	This may be a videotaped live discussion within the group and then used as the introduction to many or all of the individual self-coaching videos. Brain injury-related information may be included in this segment, ideally using a model of the brain to make the information as concrete as possible.
2. Explanation of the individual's specific difficulty that requires self-coaching.	Often this statement is made collaboratively by the person and the therapist. Person-specific brain injury information may be included in this segment — again, using a model of the brain. If an appropriate level of comfort and mutual respect has been established in the group, then statements about the person's difficulty can and should be clear and direct: for example, 'Bob, you see this part of the brain? It helps us to control our impulses. Your brain is injured here; that's why you're an impulsive guy. You have a hard time stopping yourself from doing or saying the first thing that pops into your head, right? But that doesn't mean you can't be successful. Think about Ben Rothlisburger, quarterback of the Pittsburgh Steelers. Last week he had a banged up knee and broken thumb, but he still played and played very well. But he had to wear special equipment, use special strategies, and accept special help — and it wasn't easy. But he did it. It's not easy for you to control your impulses; that's why we're working out these special plays; and that's why you're going to get the video and watch it many times to make the plays automatic!!'
3. Brief vignette demonstrating what the difficult situation looks like without self-coaching	For example, the participant loses his temper; the participant misinterprets another person's behaviour, and so forth.
4. Brief vignette demonstrating what the difficult situation looks like with the self-coaching script — that is, successful negotiation of the difficult situation.	This segment could include an admired peer using the self-coaching script, so that it has positive associations as it is viewed on the video.
5. Possibly an everyday communication partner demonstrating an acceptable cue for the participant to use self-coaching script.	ECPs scripts should also be negotiated and practised so that cuing does not elicit a negative reaction.
6. Possibly a description of what changes in behavior will demonstrate success of the self-coaching script.	It is useful to identify specific changes in real-world behavior that will indicate success of the 'play'.
7. Possibly some 'cheerleading' from group members for motivational purposes.	Peer support and other forms of encouragement are valuable motivators.
8. For some individuals it may be desirable to include in the video the entire discussion and negotiation that leads to the scripts.	This may be particularly valuable for those with significant memory impairment.

and routines in which the difficulties arise. Thus the intervention must take into account the routines of everyday life and ensure considerable practice with the self-coaching scripts within those routines. This is one of the reasons for the involvement of ECPs. Ideally everyday communication partners understand the plays and their rationale, know and are comfortable with their roles (e.g., prompting the play), and can execute their roles without irritating or boring the person with brain injury. The need for automatization is also one of the reasons for using self-coaching videos to ensure large numbers of

learning trials for habituation. These short videos typically include content outlined in Table 2, but can be customised to meet individual needs.

If well constructed, the self-coaching videos serve three purposes beyond habituation of the plays. Following TBI, many people have relatively weak self-monitoring and self-awareness, both of which might be improved with video self-observation. These self-coaching videos allow the participants to observe themselves being successful using the self-coaching plays and scripts. In some cases they allow the participants to observe

themselves being unsuccessful without the self-coaching play/script. Because self-observation can be emotionally challenging, authorisation for self-observation should be granted by a relevant clinician (e.g., clinical psychologist, psychiatrist, or social worker).

Second, the video can include the negotiation and agreements that led to the play, thereby short-circuiting later objections based on faulty recollection of the rationale for the play. Third, the videos can contain simple educational content about the person's injury and its effects. When I create self-coaching videos, I routinely begin with a few minutes of educational content about brain injury and the individual's specific injury. During these few minutes of presentation, I typically sit next to the participant and hold a model of a brain, pointing out relevant areas and their importance. Participants who are many years post injury often report that this information is new and important for them and their ECPs.

The Importance of Personally Meaningful Metaphors

In our work with individuals with TBI, my colleagues and I have made considerable use of an information processing theory developed by Phillip Barnard, *Interacting Cognitive Subsystems* (ICS; Barnard, 1985). The theoretical model, which posits nine cognitive subsystems (i.e., qualitatively distinct information processing codes) and their interrelationships, was originally developed to explain basic findings in the processing of language and other information. Teasdale and Barnard (1993) presented detailed descriptions of the ICS cognitive architecture and illustrated its explanatory power in relation to both normal cognition and clinically significant phenomena.

From a clinical perspective, the critical features of the theory are its distinction between propositional meaning and implicational meaning, its integration of emotion into theoretical accounts of all information processing, and the central position accorded implicational meaning in the processing of information and regulation of emotions and behaviour (Teasdale & Barnard, 1993). The Propositional code includes meanings that are literal and verifiable. Much of the stored knowledge typically referred to as the semantic knowledge base or declarative knowledge is included in the Propositional code. In contrast, meanings stored in the Implicational code are generic and holistic, capturing deep regularities, themes, and interrelationships in human experience. These meanings rely on indirect language for their expression,

including metaphor, narrative, image, symbol, poetry, parables and the like.

Meanings stored in the Implicational code are bidirectionally tied to emotion and affect. Thus, visceral and somatic states and emotions can trigger and influence the development of beliefs at this level (e.g., the negative emotions associated with punishment can elicit and strengthen the implicational sense of self-as-victim); conversely, attending to implicational-level representations can induce emotions (e.g., thinking of oneself as master of one's destiny can elicit positive emotional states). In this sense, the Implicational code is directly tied to emotion, motivation, decision making, and action.

With this information-processing theory as background, effective intervention necessarily includes communication with participants that is framed within the Implicational code, that is, using personally compelling metaphors, images, symbols, narratives, and the like. This explains the term 'self-coaching' (i.e., a positive metaphor for self-regulation) as well as the metaphorically described 'plays', their metaphoric names, their heroic associations, and other dimensions of self-coaching intervention. Metaphors, including the basic coaching metaphor, should be individually explored and negotiated so that they are as meaningful, attractive, and powerful as possible. Many experiments in social psychology have demonstrated that difficult strategic behaviour is more likely to be undertaken if it is associated with positive metaphors, images, heroes, group affiliations, and the like.

For participants who are not sports minded, the following self-regulation metaphor mines can be explored. Each group member should be invited to explore alternative metaphors for self-regulation, with the goal of identifying metaphors that 'feel good':

- Music: Self-conducting
- Dance: Self-choreographing
- Business: Self-managing; self-supervising
- Film: Self-directing
- Ranching: Self-shepherding
- Hiking: Self-guiding
- Military: Self-commanding.

In addition, specific positive metaphors may be selected to represent the kind of person the individual can be when effectively self-coached (e.g., a Clint Eastwood kind of person; a Wayne Gretsky kind of person; a Bono kind of person). Similarly, specific negative metaphors can be selected to represent the kind of person the individual may be

TABLE 3

Examples of Generally Useful Self-Regulatory Scripts ('Plays') to be Used by Participants and Staff

Scripts ('Plays')	Description
1. The 'Big deal/little deal' play:	'This is a big/medium sized/little deal; It's a big (medium sized/little) deal because...; Because it's a big (medium sized/little) deal, this is what I should do...; There's always something that works.' This self-regulatory/self-coaching script is especially important for individuals who are anxious or hyper-reactive, but should be practiced by everybody. This script is useful for staff in high stress work environment where there is a tendency to treat all issues as 'big deals', thereby contributing to the stress levels of the work setting.
2. The 'Let's think about that' play:	As one among many procedures to combat impulsiveness, staff should use this script routinely — in self-coaching intervention and throughout the program. Participants should also be encouraged to use the script routinely.
3. The 'Am I ready?' play:	The 'Am I ready' play can be used when leaving home in the morning ('Do I have my keys? ... what I need at work'), when getting ready for a test, when going into a job or meeting, and at many other times.
4. The 'Am I sure?' play:	This play is useful for staff who may like to communicate information that they are not certain of. It is useful for participants who tend to confabulate or otherwise mask memory problems by making claims that they are not sure of.
5. The 'What about you?' plays:	This set of 'non-egocentrism plays' includes social pleasantries (e.g., 'What's up? How's your day?'), offers of assistance or support (e.g., 'Do you need any help?'), and checks to make sure that one is not making incorrect assumptions about the other person (e.g., 'Is this an OK time to talk?'; 'Do you need a hug?'). These plays are useful for participants (and staff) who tend to be egocentric or have difficulty reading others' mental and emotional states, that is, they tend to have difficulty getting outside of their framework and into the framework of others (others' interests, needs, concerns, emotional states, sensitivities, and the like).
6. The 'Respect' play:	The respect play is critical in situations in which one might not be certain of 'boundaries' (e.g., 'Is it OK to give this person a hug?'), nicknames, acceptable language, and the like.
7. The 'Hang in there' play:	The hang in there play tends to be important for people with brain injury because they often fatigue easily, encounter more failure than they were accustomed to before the injury, may have damage to initiation/motivation circuitry in the brain, and in general need regular encouragement. The hang in there play may include motivating self-talk, reminders to use 'team mates' (i.e., peers or other people resources), modification of tasks to make them more doable, and others.

Note: The above are self-regulatory scripts ('plays') that are generally useful for everybody (not just people with disability) and therefore should be infused throughout the intervention process and throughout life. In rehabilitation and community support centres, these scripts should be part of staff training as well as participant training.

when not effectively self-coached (e.g., a Mike Tyson kind of person).

Self-Coaching Plays: Illustrations

Two members of our self-coaching group, both participants in a community support program, were experiencing escalating conflict. Doug had a variety of impairments associated with three surgeries to remove brain tumours, the largest of which was located in his right frontal lobe. He had significant word (and name) finding problems, general impulse-control problems, and significant difficulty reading others' mental and emotional states. He dealt with his name finding problems by calling everybody 'Bud', a practice that irritated

John, who had anger management problems as well as strong reactions to perceived disrespect. Prior to his brain injury, which had exaggerated preinjury impulsiveness, John had stabbed a fellow prisoner to resolve a conflict. Thus Doug and John were on a collision course within the social environment of their Day Program.

They agreed to work on a self-coaching play with the goal of moving beyond their conflict. Twenty minutes of group brainstorming resulted in the following play. John would play 'The Best Defense is a Good Offense' play. Rather than waiting for Doug to call him Bud, he would approach Doug and say, 'Hi Doug; I'm John'. For his part, Doug would try to remember to ask people for their names before addressing them as

Bud and would also play 'The Payton Manning' play. Payton Manning, celebrated quarterback of the Indianapolis Colts, is famous for changing plays at the line of scrimmage, based on his perception of the other team and the defensive play they are likely to call. In the self-coaching video, we highlighted Doug's difficulty reading others' mental states and the associated need for the Payton Manning play.

A review 1 month later revealed that the play (both sides of the play) had worked well, the two had experienced no conflict, Doug was no longer calling anybody Bud, and John indicated that he felt much better about Doug because he understood his behaviour as other than deliberately disrespectful. Table 3 presents several self-coaching plays that we have used with many individuals with TBI as well as in staff training.

Evidence

Because the specific intervention approach described in this article has not yet been subjected to empirical scrutiny, support comes from creating an 'evidence mosaic' out of research in related domains. I will first offer negative evidence from studies of traditional SST with several populations. I will then summarise the evidence base for social competence training in TBI, for self-talk training with other disability groups, for script training, for context-sensitive intervention, and finally for training of communication partners.

Traditional Social Skills Training: Other Populations

Traditional SST (defined above) has received little support in the many experimental studies of its use with a variety of clinical populations. Gresham, Sugai, and Horner (2001) reviewed several narrative reviews and meta-analyses of this extensive research literature, concluding that 'SST has not produced large, socially important, long-term, or generalised changes in the social competence of students with high-incidence disabilities' (p. 331). Specifically, they described two meta-analyses. The first included 99 studies of SST applied to students with emotional and behavioural disturbance, with a small mean effect size of .20. The second included 53 studies of SST applied to students with learning disabilities, with a similarly small mean effect size of .21. Similarly, Abikoff and colleagues' randomised controlled clinical trial of interventions for students with ADHD (a population similar in pathophysiology and symptomatology to TBI) found that decontextualised SST added nothing to

the effect size produced by medication alone (Abikoff et al., 2004; Hechtman et al., 2004).

In summary, RCTs, meta-analyses, and narrative reviews of experiments with several populations using decontextualised, clinic- or classroom-bound SST suggest minimal effect on real-world social behaviour, peer social skills ratings, and maintenance of new social behaviours over extended periods of time. Because individuals with TBI often possess declarative and procedural knowledge of social competencies, but have difficulty with transfer of training, social perception, and on-line decision making, one would expect even smaller effects of SST with this population. Despite this large body of negative evidence, decontextualised SST remains an unsupportable staple in many brain injury programs.

Social Skills Intervention: TBI

Struchen's systematic review of the evidence for social communication interventions for individuals with TBI yielded 19 peer-reviewed studies, predominantly single-subject experiments or case studies (Struchen, 2005). Commonly used intervention procedures included modelling, role-playing, feedback, self-monitoring, behavioural rehearsal, and social reinforcement. In general, the studies showed positive outcomes, but were plagued by serious methodological flaws.

Only one of the 19 studies was classified as providing Class I evidence (i.e., from a randomised, effectively controlled clinical trial). In that study, Helffenstein and Wechsler (1982) demonstrated the effectiveness of 20 hours of Interpersonal Process Recall (IPR) compared with 20 hours of nontherapeutic attention. IPR includes individualised videotaped interactions; structured review of the taped interactions with feedback provided by conversation partner, a therapist, and the individual with TBI; development of alternative scripts and skills as needed; modelling; and guided rehearsal. Control of the 'coaching' process, including video review, is gradually turned over to the participant. Participants receiving the IPR treatment reported significantly reduced anxiety and improved self-concept. Furthermore, they were rated as having significantly greater improvement in specific interpersonal skills by both professional staff and independent observers, who were unaware of group placement. Maintenance of improved interaction was confirmed at a one-month follow-up. Because IPR can be perceived as a social self-coaching intervention, this study offers relatively direct evidence for self-coaching in TBI rehabilitation.

Ylvisaker and colleagues (submitted) reported a systematic review of the evidence for behavioural interventions for individuals with

behaviour disorders after TBI. Of the 144 participants whose behaviour problems were specifically described, 77 had problematic communication behaviours among their treatment targets. Communication-related behaviour problems included verbal aggression, excessive or disruptive talk, extreme profanity, sexually inappropriate interaction, screaming, and verbal outbursts. If other negative behaviours that serve a communication purpose (e.g., physical aggression functioning as escape communication) are added to this list, then a large majority of the problematic behaviours targeted in the behavioural intervention literature have a communication dimension. Because all of the subjects across the reviewed studies improved in response to treatment, this body of literature adds to the general conclusion that social communication problems after TBI can be effectively treated. However, this body of evidence does not specifically address self-coaching interventions.

In addition, there exist controlled intervention studies that employed components of the self-coaching approach (e.g., self-talk) in successfully addressing general outcomes, such as improved anger management (Medd & Tate, 2000) and reduced social anxiety (Hodgson et al., 2005). If one can assume that improved control over anger and anxiety is associated with more successful social interaction, then additional indirect empirical support for the current approach can be derived from these studies.

Evidence for Context-Sensitive 'Self-Talk' Approaches

Support for the notion that self-regulation is self-talk and that self-regulatory self-talk derives, at least in part, from scripted interaction with others comes largely from studies of normal child development and self-talk interventions with other populations.

The Developmental Importance of Self-Talk

Consistent with the Vygotskian (and Socratic) theme of thinking as self-talk internalised from interaction with more competent members of the culture, Landry and colleagues have recently documented a significant association between parents' interactive style and growth in the preschool child's executive self-regulatory functions, specifically problem-solving skills (Landry et al., 2001, 2002, 2003). Parental scaffolding (including hints, prompts, and other verbal supports) at age three predicted scores on executive function measures at age 6. Because many adults take over the executive, self-regulatory aspects of functioning for children with disability, they should be alerted to the

importance of engaging their children in scripted executive function/self-regulation routines, providing whatever support may be necessary. Larsen and Prizmic (2004) reviewed the available developmental evidence regarding *affect-regulation* strategies, including self-talk strategies, that might be encouraged within these everyday routines of interaction.

Self-Talk Interventions With Other Related Populations

The most thoroughly studied self-talk/self-regulation therapy is cognitive-behaviour modification (CBM; Meichenbaum, 1977). Barkley (2004) reviewed the reviews and meta-analyses of CBM applied to adolescents with ADHD (understood as an executive function/self-regulation disorder) and concluded that, despite documentation of statistically significant improvements, that literature has failed to demonstrate clinically meaningful outcomes. However, missing from Barkley's review was Robinson and colleagues' (1999) meta-analysis in which the investigators restricted their review to context-sensitive studies in which the intervention was delivered in the setting in which the problems were occurring. Twelve studies (with 36 effect size measures) yielded a mean effect size of .64, or a 24 percentile rank increase for the CBM subjects compared to controls in reducing aggression associated with their ADHD.

Self-regulatory script intervention is a not-too-distant cousin of Social Stories as used with children and adolescents on the autism spectrum. In both cases, the goal is improved understanding as well as increased self-regulation of emotions and behaviour by framing the improvements positively within personally compelling stories (Social Stories) or 'plays' (self-coaching). Samsoti and colleagues (2004) reviewed the available evidence for social stories in autism. The 10 published reports (all single-subject studies or case studies) all had positive outcomes, but serious methodological flaws were common. Therefore, the authors concluded that the evidence base is not yet strong enough to honour the intervention with the title 'evidence based'; however, the evidence is accumulating and the procedure remains a clinical recommendation.

Evidence for Context-Sensitivity of Intervention: TBI

Self-coaching as described in this article assumes that the self-coaching scripts are customised to meet individual needs and are practised in everyday contexts with the support of

ECPs. The variable of context-sensitivity was examined by Braga and colleagues (2005) in a large *N* randomised controlled clinical trial showing that cognitive and physical aspects of children's functioning are more effectively facilitated after brain injury by training parents to provide appropriate functional stimulation within the routines of everyday life versus treating the child using a traditional clinic-based model of professional intervention. That is, sensitivity to context factors in selecting intervention targets and in implementing intervention procedures produces results that are superior to those produced in clinical settings by specialists working in relative isolation and in the context of activities removed from the routines of everyday life. It is likely that the social self-regulatory dimensions of functioning are best approached in a similar indirect, context-sensitive, and long-term manner. Ylvisaker (2003) summarised several sources of evidence for context sensitivity in cognitive rehabilitation.

Evidence for Effectiveness of Communication Partner Training: Other Populations

The success of self-coaching interventions often relies on the understanding and competence of communication partners. For this reason, ECPs are often collaborators in the creation of the plays and partner scripts may be components of the plays. In a variety of fields of communication disorders, the training of communication partners has come to be seen as central to ecologically valid interventions. These developments are consistent with the current World Health Organization (2001) emphasis on *context* (environmental and attitudinal) as a determinant in health and disability outcomes. Training of communication partners has been shown to have a positive effect on communication effectiveness and (re)acquisition of communication skills in toddlers and preschoolers with language disorders and developmental disabilities (Girolametto et al., 2003), adults with aphasia (Kagan et al., 2001), adults with dementia (Rippich et al., 1999), and adults with TBI (Togher et al., 2004).

Self-Coaching in Perspective: Putting the Pieces Together

As described in this article, self-coaching is one component of a larger integrated approach to helping individuals with TBI achieve goals in their lives. In my experience, no interventions yield sig-

nificant results in the absence of (1) development of a sense of self that is at the same time positive and adequately realistic about the hard work needed to be successful, (2) engagement in activities that are perceived as meaningful, (3) context-sensitive environmental supports that enable a person to be successful despite ongoing cognitive and self-regulatory difficulties, and (4) effectively trained ECPs who are competent in providing those supports without inadvertently creating helplessness in the person with TBI. Self-coaching is therefore integrated within a larger rehabilitative effort that focuses on a meaningful and positive identity, engagement in meaningful projects, and well modulated cognitive and behavioural supports.

Ylvisaker and Feeney (2000a) described a theoretical rationale and procedures for collaborating with individuals in the construction of a sense of personal identity that holds the potential to underpin the person's efforts to achieve effective social self-regulation. If interaction strategies or general self-regulation strategies are perceived as uncomfortable or at odds with 'my real self', then they will be discarded regardless of their effectiveness as perceived by others. Conversely, if these strategies are associated with a 'me' that is compelling and possible, then the likelihood of their adoption and ultimate habituation is increased.

In the absence of meaningful engagement in chosen life activities, all interventions will ultimately fail. Many of the individuals with whom I work have meaningful engagement in family, social, avocational, and vocational or educational activities. However, those who tend to require ongoing supports for successful living often lack such natural engagement. Therefore, my colleagues and I attempt to create projects within which we collaborate with the program participants in product-oriented project activities that are typically designed to benefit others (Ylvisaker, 2000). A variety of cognitive, executive function, and social goals are pursued in project-related activities.

In a variety of publications, Ylvisaker and Feeney have described and provided evidence supporting an integrated, antecedent support-oriented approach to helping individuals with cognitive and behavioural difficulties after brain injury (Feeney & Ylvisaker, 1995, 2003, 2006; Ylvisaker, 2003; Ylvisaker & Feeney, 1996, 1998a, 2000b, 2001, 2002; Ylvisaker, Jacobs, & Feeney, 2003). Within this approach, the traditional arrangement of impairment-oriented, activity/participation-oriented, and context-oriented interventions is reversed (WHO, 2001). Historically it was common for rehabilitation professionals to first attempt to restore underlying cognitive and self-regulatory functions with impair-

ment-oriented exercises, possibly combined with pharmacologic interventions. If these efforts proved to be insufficiently successful, then compensatory strategies were taught, often in clinical settings and in a manner insensitive to contextual realities. Finally, context supports may have been considered.

Reversing these WHO-defined approaches yields a framework within which context supports are implemented that enable the individual to participate in meaningful activities. Within the context of this participation, compensatory strategies can be practised, including plays of the sort described in this article. With adequate practice, the strategies or plays may be internalised, thus ultimately yielding a reduction in the underlying impairment.

Support-oriented interventions run the risk of creating helplessness in the person being helped. Thus helping without creating helplessness comes centre stage in rehabilitation theory and practice. Ylvisaker and Feeney (2002, in press) presented a framework for rehabilitation within which learned helplessness and its positive opposite, learned optimism, are described along with procedures used to promote learned optimism and a sense of responsibility and strategic accountability. With context supports and the threat of learned helplessness at center stage in rehabilitation theory, training and support for everyday communication partners and other paid and natural support people becomes a high priority. Ylvisaker and Feeney (1998a, 1998b) presented a variety of procedures for training and supporting important everyday people in the life of individuals with disability.

It is within this broad context of identity counselling, meaningful participation through project development, cognitive and behavioural supports for participation, and training of everyday communication partners that self-coaching interventions should be viewed.

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