

An occupation-based video feedback intervention for improving self-awareness: Protocol and rationale

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Une intervention basée sur la rétroaction vidéo pour améliorer la conscience de soi : protocole et raison d'être

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Key words: Awareness; Cognitive therapy; Occupational therapy; Rehabilitation; Self-regulation.

Mots clés : autorégulation; conscience; ergothérapie; réadaptation; thérapie cognitive.

Abstract

Background. Impaired self-awareness can limit rehabilitation outcomes for people with traumatic brain injury (TBI). Video feedback on occupational performance has been found to improve self-awareness after TBI when delivered according to specific principles. **Purpose.** The purpose of this article is to describe an occupation-based video feedback intervention found to be effective in a randomized controlled trial to assist with translation into clinical practice. **Key Issues.** The intervention uses therapist-mediated video feedback on clients' occupational performance, aiming to facilitate self-reflection on performance and improve self-awareness. This paper describes the theoretical background, intervention principles, and protocol of the intervention. **Implications.** Therapists can use video feedback intervention, incorporating the principles in this article, to improve people's intellectual awareness and ability to recognize and correct errors during task performance after TBI without a negative impact on emotional status.

Abrégé

Description. Une altération de la conscience de soi peut limiter les résultats en matière de réadaptation chez les personnes ayant subi un traumatisme cérébral. On a démontré qu'une rétroaction vidéo sur le rendement occupationnel améliore la conscience de soi chez les personnes ayant subi un traumatisme cérébral, lorsque l'intervention est effectuée en fonction de certains principes spécifiques. **But.** Décrire une intervention basée sur la rétroaction vidéo dont on a démontré l'efficacité dans un essai clinique randomisé, afin de favoriser l'application de cette intervention dans la pratique clinique. **Questions clés.** L'intervention est basée sur une rétroaction vidéo sur le rendement occupationnel des clients, dirigée par l'ergothérapeute, dans le but de faciliter l'autoréflexion face au rendement et d'améliorer la conscience de soi. Cet article décrit les fondements théoriques, les principes de l'intervention et le protocole de l'intervention. **Conséquences.** Les ergothérapeutes peuvent utiliser l'intervention basée sur la rétroaction vidéo, tout en incorporant les principes décrits dans cet article, pour améliorer la conscience intellectuelle des personnes et leur capacité de reconnaître et de corriger leurs erreurs lors de l'exécution d'une tâche après avoir subi un traumatisme cérébral, sans avoir d'impact négatif sur l'état émotionnel.

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Awareness of one's deficits and limitations is important when learning a new skill or improving abilities (Fleming & Schmidt, 2014). Self-awareness broadly encompasses online awareness (i.e., error recognition and correction) and intellectual awareness (i.e., self-knowledge of abilities) (Toglia & Kirk, 2000). After severe traumatic brain injury (TBI), people commonly have difficulty recognizing errors during occupational performance and display reduced awareness of limitations (Barco, Crosson, Bolesta, Werts, & Stout, 1991; Bogod, Mateer, & MacDonald, 2003; Mateer, 1999; Sherer, Bergloff, et al., 1998; Stuss & Anderson, 2004). Impaired self-awareness affects individuals' understanding of activity and role restrictions, participation in rehabilitation, and ability to set realistic goals (Fleming & Strong, 1995; Ownsworth, Fleming, Desbois, Strong, & Kuipers, 2006).

Research by occupational therapists indicates that metacognitive skills training in the context of meaningful occupations may improve self-awareness after TBI (Goverover, Johnston, Toglia, & Deluca, 2007; Toglia, Johnston, Goverover, & Dain, 2010). The term *metacognition* refers to knowledge and beliefs about one's own cognitive abilities (Kennedy et al., 2008). Metacognitive functions are often viewed as higher-order cognitive functions (Stuss & Anderson, 2004). Metacognition includes processes such as knowledge of limitations, error recognition and correction, and self-monitoring. Metacognitive impairment is common after TBI and has a negative impact on a person's integration in the community and participation in activities of daily living (Flashman & McAllister, 2002). As described by Fleming and Schmidt (2014), metacognitive skills training can involve supporting people to learn about their impairments, recognize and self-correct errors during occupational performance, and apply compensatory strategies. Feedback is a fundamental component of some approaches to metacognitive skills training, for example, providing a client with video feedback to allow self-evaluation of performance, and provision of feedback is one of the most commonly used techniques in TBI rehabilitation to improve self-awareness (Fleming & Ownsworth, 2006; Schmidt, Lannin, Fleming, & Ownsworth, 2011).

A systematic review by Schmidt et al. (2011) that meta-analyzed data from three randomized controlled trials (RCTs) found that feedback interventions compared to active control interventions produced a moderate improvement in self-awareness in people with brain injury (Hedges adjusted $g = 0.64$, 95% confidence interval [CI] = [0.11, 1.16]). However, these trials used various types of feedback in combination with other metacognitive skills training techniques. Conclusions were therefore limited about the type of feedback and the extent to which feedback in isolation of other interventions were responsible for improvements (Cheng & Man, 2006; Goverover et al., 2007).

In single-case study designs, videotaped feedback has been shown to be a powerful means of engaging people who have impaired self-awareness and a useful method to improve performance (Alexy, Foster, & Baker, 1983; Barco et al., 1991; Mateer, 1999; Ownsworth, Fleming, et al., 2006; Sherer, Oden,

Bergloff, Levin, & High, 1998). However, no systematic research has examined the effectiveness of this approach for improving self-awareness or has compared it to other forms of feedback, such as verbal and experiential feedback (Fleming & Ownsworth, 2006).

RCT Description

We recently completed an RCT with 54 participants with TBI to determine which was most effective for improving self-awareness (see Schmidt, Fleming, Ownsworth, & Lannin, 2013). The three types of feedback intervention were (a) video plus verbal feedback, (b) verbal feedback, and (c) experiential feedback only. All three groups received the experiential feedback that involved the therapist prompting the participant to identify and correct errors during occupational performance. After completion of the task, Groups 1 and 2 also received verbal feedback in the form of a discussion with a therapist about their occupational performance after completion of the activity. Group 1 also received video feedback that involved watching their occupational performance on video while engaging in discussion with the therapist. Outcome variables were online awareness (i.e., number of errors made during meal preparation), intellectual awareness (i.e., the discrepancy between therapist and participant ratings of abilities), and level of emotional distress (i.e., self-rating of depression, anxiety, and stress). The results showed that the combination of video plus verbal feedback was more effective in improving online awareness than verbal feedback alone (mean difference, 20 errors; 95% CI [8.3, 32.4]) and experiential feedback (mean difference, 10 errors; 95% CI [0.7, 19.4]). Video plus verbal feedback was also associated with greater improvement in intellectual awareness (i.e., a reduction in discrepancy ratings of ability between therapist and participant) compared to verbal feedback (mean difference, 4.9; 95% CI [0.3, 9.5]) and experiential feedback (mean difference, 7.3; 95% CI [2.8, 11.9]). There were no differences between the three intervention groups with respect to changes in emotional status following the intervention period.

Purpose

Occupational therapists require further information to implement evidence-based feedback approaches in practice (Kennedy et al., 2008; Schmidt et al., 2011). Accordingly, this paper aims to facilitate translation of an evidence-based intervention into standard occupational therapy practice by describing the theoretical background and intervention protocol, including the principles and protocol of the effective feedback intervention from the Schmidt et al. (2013) study.

Theoretical Background

The current intervention draws on models from both occupational therapy and neuropsychology, including the integrated

biopsychosocial framework for understanding awareness disorders (Ownsworth, Clare, & Morris, 2006), the Comprehensive Dynamic Interactional Model of self-awareness (Toglia & Kirk, 2000), and the Cognitive Awareness Model (Agnew & Morris, 1998).

The integrated biopsychosocial framework for understanding awareness disorders describes a complex and dynamic interaction between neurocognitive (i.e., biological), psychological, and socio-environmental factors (Ownsworth, Clare, et al., 2006). It makes a distinction between impaired self-awareness of neurological and psychological origins but also recognizes the contribution of the socio-environmental context of the individual to an awareness impairment.

The Comprehensive Dynamic Interactional Model provides an occupation-based explanation of self-awareness (Toglia & Kirk, 2000) by conceptualizing two aspects: (a) metacognitive knowledge or self-knowledge and beliefs about personal abilities (i.e., intellectual awareness) and (b) online awareness or the ability to predict one's own performance (anticipatory awareness) and self-monitor and self-correct errors during task performance (emergent awareness). Individuals with TBI can display impairments in one or both types of self-awareness (Toglia & Kirk, 2000). For example, a person may not report any limitations when questioned (i.e., intellectual awareness) but then display awareness of their limitations during task performance, such as task avoidance, strategy use, or checking with others if they are correct (i.e., online awareness). The model proposes that gains in one component of awareness can influence improvements in the other component in a dynamic fashion. For instance, gains in intellectual awareness may lead to improved online awareness, but also the act of engaging in occupations or experiencing performance difficulties "online" may lead to greater intellectual awareness (Toglia & Kirk, 2000).

The Comprehensive Dynamic Interactional Model informs this intervention as participants are encouraged to use metacognitive/problem-solving strategies to improve occupational performance (i.e., anticipate, detect, and self-correct errors), as opposed to targeting self-awareness at an impairment level (Barco et al., 1991; Kennedy et al., 2008; Toglia & Kirk, 2000). In particular, clients are given opportunity to reflect on the meaning of errors after task performance, which may assist them to understand the broader implications of task difficulties and support them to recognize changes in their post-injury abilities (Ownsworth, Clare, et al., 2006). Individuals may then be able to implement the strategies in other settings due to recognition of the benefit and the need to use these strategies, thus providing potential for generalization to other tasks.

The Cognitive Awareness Model explains that development of self-awareness is reliant upon an individual accurately appraising and recalling experiences of relative success and failure in occupations (Agnew & Morris, 1998). The individual evaluates and compares current occupational performance to his or her premorbid ability (e.g., how well he or she previously performed the occupation). The individual is then able to update his or her "personal database," the store of self-knowledge and beliefs about one's abilities (Agnew & Morris, 1998). However,

due to memory and executive impairments, an individual with TBI may have difficulty detecting errors in occupational performance and/or encoding the information in memory. Despite making frequent errors on everyday occupations, the individual may not perceive changes in occupational performance. Thus, individuals may not develop self-awareness of their post-injury impairments. The Cognitive Awareness Model helps to explain the link between online and intellectual awareness systems.

The video-based intervention focuses primarily on improving online awareness and, secondarily, on improving intellectual awareness. The Cognitive Awareness Model informs this intervention as the feedback provides opportunity for self-reflection and comparison with pre-injury performance, thus allowing an individual to update his or her "personal database," making gains in intellectual awareness (Agnew & Morris, 1998; Fleming & Schmidt, 2014; Ownsworth, Fleming, et al., 2006). However, in some cases, gains in self-awareness have been associated with higher levels of emotional distress, such as depression, anxiety, and stress (Cicerone, 1989; Prigatano et al., 1986), as individuals' experience "self-discrepancy" or a mismatch between their former (pre-injury) self and current self (Cantor et al., 2005; Higgins, 1987; Higgins, Klein, & Strauman, 1985). A challenge for clinicians is to determine how to provide effective feedback that facilitates self-awareness without eliciting negative emotional reactions (Fleming, Strong, & Ashton, 1998). In the RCT that utilized this intervention, participants did not experience any significant changes in emotional status.

As metacognition and self-awareness are complex constructs, these conceptualizations have limitations. However, these models are utilized to provide a context and framework for the intervention described in this paper. In summary, the feedback intervention is guided by theories on self-awareness and self-discrepancy. It acknowledges the distinction between and interrelatedness of online and intellectual awareness, the role of occupation in facilitating both aspects of self-awareness, and the potential for emotional reactions arising from a sense of self-discrepancy. Seven core principles that underpin this intervention are described in Table 1. These principles are based on the above theoretical models and previously published approaches, including self-awareness training as part of a prospective memory rehabilitation program (Fleming, Shum, Strong, & Lightbody, 2005), the dynamic interactional approach to promote error discovery and strategy use (Toglia et al., 2010), and metacognitive skills training involving audiovisual feedback and graded prompts (Ownsworth, Quinn, Fleming, Kendall, & Shum, 2010). These principles are to be used in conjunction with the intervention protocol described below.

Intervention Description

Clinical Context

The primary aim of the feedback intervention described in this paper is to improve online awareness in people with impaired

Table 1
Principles of Video-Plus-Verbal-Feedback Intervention

Principle	Rationale	Therapist's role	Relevant studies that utilized this principle	Theoretical model
1. Use a meaningful occupation as a medium to provide feedback.	<p>The therapist can use occupational tasks to observe impairments of executive function that contribute to errors in performance.</p> <p>The therapist and the client can focus their discussion on aspects of occupational performance that need improvement, as opposed to directly discussing cognitive impairments. This may decrease the client's defensiveness and increase receptiveness to feedback.</p>	<p>Incorporate occupation in cognitive rehabilitation to facilitate realistic goal setting and use of compensatory strategies.</p> <p>Select tasks that are personally relevant to clients to enhance motivation and engagement in therapy.</p>	Chevignard et al., 2008; Fleming, 2009; Hart, Giovannetti, Montgomery, & Schwartz, 1998; Toglia, Johnston, Goverover, & Dain, 2010	Comprehensive Dynamic Interactional Model of self-awareness (Toglia & Kirk, 2000)
2. Build a therapeutic rapport.	It is particularly important to facilitate "therapeutic use of self" in self-awareness interventions where the client needs to have a high level of trust in the therapist's feedback.	Foster effective communication and promote disclosure and openness in interactions.	Daniels-Zide & Ben-Yishay, 2000; Fleming, Lucas, & Lightbody, 2006; Schonberger, Humle, & Teasdale, 2006	Comprehensive Dynamic Interactional Model of self-awareness (Toglia & Kirk, 2000)
3. Provide opportunity for self-recognition of errors.	<p>The opportunity for self-detection and correction of errors is necessary for clients with higher levels of cognitive function who are required to generalise skills to other situations.</p> <p>This aims to increase a client's independent self-monitoring and self-regulation of task performance.</p>	<p>Provide an opportunity for the client to independently recognise errors during task performance.</p> <p>Avoid automatically correcting a client's errors; instead, allow the client time to problem-solve and self-correct errors.</p> <p>Facilitate self-recognition of errors by asking nonspecific questions to prompt the client to analyze his or her performance.</p>	Owensworth, Fleming, Desbois, Strong, & Kuipers, 2006; Owensworth, Quinn, Fleming, Kendall, & Shum, 2010; Tailby & Haslam, 2003; Toglia et al., 2010	Cognitive Awareness Model (Agnew & Morris, 1998)
4. Provide feedback in a confidential and quiet environment.	<p>Clients may not want to disclose or discuss changes in their post-injury functioning in front of other people.</p> <p>Clients with neurological injuries often have impaired attention and memory and therefore require minimal environmental distractions.</p>	<p>Provide feedback in a private environment with minimal distractions.</p> <p>Create a safe environment for self-disclosure and open discussion.</p> <p>Clarify how the information will be used and explain the limits of confidentiality.</p>	Allen & Ruff, 1990; Sohlberg, McLaughlin, Pavese, Heidrich, & Posner, 2000	Integrated biopsychosocial framework for understanding awareness disorders (Owensworth, Clare, et al., 2006)
5. Ensure the feedback is timely.	Providing feedback early in the rehabilitation process has potential to increase a client's self-awareness and enhance the ability to successfully reintegrate back	Determine how ready a client is to receive feedback by engaging in clinical reflection and discussion with rehabilitation team	Barco, Crosson, Bolesta, Werts, & Stout, 1991; Langer & Padrone, 1992; Owensworth & Clare, 2006	Integrated biopsychosocial framework for understanding awareness disorders (Owensworth, Clare,

(continued)

Table 1 (continued)

Principle	Rationale	Therapist's role	Relevant studies that utilized this principle	Theoretical model
	into the community. Timely feedback maximises recall of the information and increases its relevance for clients with memory and attention impairments. Feedback is likely to be most beneficial when it occurs within 1 day of task performance but should be individualized to suit clients' needs.	members. Feedback should be given as soon as possible after the client completes the task. A rest break prior to the feedback session may be necessary for clients who experience fatigue.		et al., 2006)
6. Provide feedback on areas of strength as well as areas to improve.	A "sandwich" approach increases the likelihood that the client feedback will be motivated to improve, as opposed to feeling discouraged about the performance.	Describe strengths or abilities demonstrated before mentioning problem areas. Focus on specific task performance areas that require improvement and discuss strategies for improvement. Avoid directly criticizing the abilities of the client. Reinforce the client's progress and efforts in therapy.	Fleming et al., 2006; LeBaron & Jernick, 2000; Prigatano, 1991	Comprehensive Dynamic Interactional Model of self-awareness (Toglia & Kirk, 2000)
7. Ensure there is adequate psychological support.	Psychological support is a vital component of self-awareness interventions to assist clients in coping with the knowledge of loss of abilities. Despite the potential for emotional distress, development of self-awareness within the context of a supportive therapeutic relationship can facilitate improvement in functional skills and outcomes.	Monitor the client's emotional status and coping reactions (e.g., denial and avoidance) during occupation-based interventions.	Fleming, Strong, & Ashton, 1998; Ownsworth & Clare, 2006	Cognitive Awareness Model (Agnew & Morris, 1998)

self-awareness following TBI, which includes the ability to self-monitor and correct errors during occupational performance as well as to plan for and predict performance. A secondary aim is to facilitate intellectual awareness. The intervention is appropriate for people with a nonprogressive brain injury who demonstrate impaired self-awareness, including either or both intellectual awareness and online awareness. The trial that demonstrated the efficacy of this intervention was conducted with adults with severe TBI who demonstrated impaired self-awareness, had emerged from post-traumatic amnesia (PTA), and had no communication disability or behavioural changes that compromised ability to participate in the intervention (Schmidt et al., 2013). The sample included both rehabilitation inpatients and community-dwelling

clients who were up to 34 years post-injury, suggesting the intervention can be implemented at any stage following emergence from PTA even if clients have residual memory impairments. It would not be considered appropriate for clients who remain in a state of confusion or have no established ability to retain new information.

Intervention Protocol

This section describes the application of the occupation-based video-plus-verbal-feedback intervention, which encompasses experiential feedback, using an example of a client with TBI completing a meal preparation task. However, it is designed to be applied consistently across other

tasks. The intervention used in the RCT involved four intervention sessions with feedback implemented according to the condition to which participants were randomly allocated. These sessions were completed within 2 to 3 weeks with 2 to 4 days in between each session. Feedback was provided within 24 hr after completing the meal preparation task. This intervention protocol is used alongside the seven core intervention principles outlined in Table 1.

Step 1: Self-prediction/planning. The client and therapist establish the goals of an activity that is meaningful to the client, prior to engaging in the activity (see Principle 1, Table 1). Together they discuss how to prepare the meal, and the therapist creates a checklist of the steps of the task. Agreement on the steps of the task is important, as this can be referenced during the feedback session (Toglia et al., 2010). This discussion can foster effective communication and facilitate the development of a therapeutic rapport between the client and therapist (see Principle 2, Table 1). The checklist developed for the RCT was called the Meal Independence Rating Scale (MIRS; see Appendix A in the supplementary materials online for an example of the MIRS for a pasta meal). The MIRS is based on the Executive Function Performance Test (Baum et al., 2008) and rates the task components of initiation, execution, and completion.

Step 2: Self-monitoring and self-correction. While the client is preparing the meal, the therapist provides appropriately timed prompts and on-the-spot feedback using the “pause, prompt, praise” technique (McNaughton, Glynn, & Robinson, 1987; Ownsworth et al., 2010; Ownsworth, Fleming, et al., 2006). This technique provides the client with an opportunity for self-recognition and correction of errors (see Principle 3, Table 1). For example, when an error is made during the activity, the therapist does not provide any prompt initially but allows 5 to 10 s for the client to detect and self-correct the error. If the client continues to make the error, the therapist provides a nonspecific prompt, such as “Is there anything you need to check?” This initial prompt is followed by a more specific prompt if the client does not respond, such as “The water is rapidly boiling. You need to check the temperature.” Further specific prompts are then provided until the client corrects the error. The therapist provides immediate positive feedback (i.e., praise) when the client spontaneously corrects an error or utilizes a compensatory strategy or if the client corrects an error in response to prompting. If the client asks for advice about the task or verification of an action, the therapist prompts the client to problem-solve independently and provides direct guidance only if the client cannot generate a solution (Ownsworth et al., 2010). During the preparation of the meal, the therapist videotapes the therapy session holding the camera at shoulder height to minimize disruption of the meal preparation.

Step 3: Feedback/self-evaluation. Following completion of meal preparation (e.g., after eating the meal), the therapist provides feedback and engages the client in a

self-evaluation. This feedback is conducted in a confidential environment to enable clients’ disclosure and with minimal distractions to increase client’s attention to the discussion (see Principle 4, Table 1) and is completed in a timely manner (see Principle 5, Table 1).

The first component of video plus verbal feedback involves the client and therapist independently rating task performance using the MIRS checklist created in Step 1. The therapist and client discuss discrepancies between their ratings on the checklist (Ownsworth, Fleming, Shum, Kuipers, & Strong, 2008; Schmidt et al., 2013). The second component involves the client viewing his or her videotaped performance of meal preparation with the therapist. This is accompanied by a discussion with the therapist involving identifying errors in task performance, compensatory strategies utilized, and areas of strength (Mateer, 1999; Ownsworth et al., 2008). This feedback discussion highlights areas of strength of the client’s performance as well as areas that require improvement (see Principle 6, Table 1).

When unexpected issues arose in the feedback discussion within the RCT (e.g., client becoming aggressive or overly distressed), the therapist followed a feedback protocol guideline (guidelines available from the author on request). For example, if participants became overly distressed when receiving feedback, the therapist reminded them that difficulties with task performance are common after brain injury and also reassured them that they can improve with more practice and strategy use. Therapists ensured that psychological support was available for all participants, in particular, for those who may demonstrate emotional distress during the feedback discussion (see Principle 7, Table 1).

Discussion

This paper describes the theoretical background, the principles, and the protocol of an evidence-based intervention for improving self-awareness in people after TBI. While it is important to publish the results of high-quality research, such as RCTs, it is also valuable to disseminate the intervention techniques that have demonstrated effectiveness to support clinicians to translate these into practice (Bannigan et al., 2008).

As stated previously, this intervention was based on a number of theoretical models, including the Comprehensive Dynamic Interactional Model approach (Toglia & Kirk, 2000). This model describes a dynamic interaction between online awareness and intellectual awareness, indicating that a person can have impairments in one or both aspects of self-awareness. In this intervention, the participants’ active involvement in the video analysis of their occupational performance and selection of strategies to improve performance (i.e., improvement in online awareness) may have served to update their self-knowledge more broadly, thus also improving intellectual awareness.

Similarly, the Cognitive Awareness Model (Agnew & Morris, 1998) explains that development of self-awareness is

reliant upon an individual's accurately appraising and recalling experiences of relative success and failure on occupations. During the video-plus-verbal-feedback intervention, participants engaged in a cyclical process of setting goals, making predictions, planning and performing activities, and reflecting on their outcomes. Therefore, they were supported to develop more realistic self-appraisal of their abilities as they were given opportunity to identify and reflect upon discrepancies between self-perceptions and the therapist's views using a structured discussion platform. Thus, participants were enabled to update their "personal database." The link between metacognitive skills training and the process of updating one's "personal database" would be valuable to explore in future research.

Clinical Applications and Considerations and Future Research

This intervention has significant clinical applications as the use of client-centred goals and meaningful occupations is central to occupational therapy practice (Doig, Fleming, Cornwell, & Kuipers, 2009; Ownsworth, Fleming, et al., 2006). The intervention in this study used the participants' performance of meal preparation as a medium to provide feedback. However, the intervention may be equally as effective if the principles and protocol were applied to other occupations, such as shopping or community access. It is not known whether or not self-monitoring and self-regulation skills developed in one context generalize or carry over to other relevant everyday contexts. Further research using this approach is therefore required to examine skills maintenance and generalization to different occupations that are relevant to clients' goals.

There are clinical considerations when incorporating video feedback into a routine rehabilitation program. For example, it may be more costly to use than traditional feedback interventions, as it requires not only more therapist time but also access to audio-visual recording technology. However, this technology is often embedded in devices such as mobile phones and tablets and therefore is likely to be accessible in most contexts. The feasibility and cost-efficiency of investing the therapist time and using video technology for self-awareness interventions needs to be explored in future studies to inform policy and standards relating to rehabilitation and funding for people after brain injury.

An additional consideration for clinical application is clients' emotional response to the video feedback. Although the use of video-based feedback in the RCT (Schmidt et al., 2013) was not associated with emotional distress in the trial, some clients may find this approach overly confronting. These clients may generally be resistant to feedback about personal shortcomings due to the threat posed to their self-image and benefit more from nonconfrontational approaches at least initially (Fleming & Ownsworth, 2006).

There are a number of issues that warrant further research to assist with implementation of feedback interventions. We know from the results of the trial that the video-plus-verbal-feedback intervention was effective when delivered over four sessions within a 2-week time frame with the full video viewed

during each feedback session (Schmidt et al., 2013). However, it may be possible that for some clients, the same intervention could be delivered on a less frequent basis or less intensive manner with a similar degree of effectiveness, as some clients may respond to this type of feedback and develop self-regulation skills more readily or with less practice. As discussed earlier in the integrated biopsychosocial framework, people can experience impaired self-awareness from differing origins, such as biological, psychological, or socio-environmental. Thus, this may impact their response to the video feedback intervention. Other clients with memory and learning impairments, for example, may not respond to modified formats of the feedback intervention. The original RCT that demonstrated the effectiveness of video plus verbal feedback isolated the contribution of video feedback and demonstrated its effectiveness over and above verbal feedback and experiential feedback. Further research is needed to evaluate other components of metacognitive interventions to determine the most effective type, format, and intensity for brain injury rehabilitation.

Intervention and Protocol Strengths and Limitations

The concepts underpinning this intervention form the basis of many occupational therapy intervention approaches. For example, the Comprehensive Dynamic Interactional Approach (Toglia & Kirk, 2000) and the Cognitive Orientation to daily Occupational Performance (Dawson et al., 2009; Polatajko & Mandich, 2004) use occupation as a medium for therapy, stress the importance of building a therapeutic relationship, and use a client-centred approach. However, the intervention described in this study has some unique elements. As well as being grounded in theoretical models of self-awareness, it focuses on improvement in self-awareness as a primary outcome and highlights the use of feedback as an intervention approach.

There are limitations of this intervention and the protocol itself that have potential to reduce the translation of evidence-based principles into clinical practice. As metacognition and self-awareness are complex constructs, a limitation of this intervention is its inability to address all aspects of these concepts. Additionally, the description of the population suitable for this intervention is broad and does not include specific recommendations for the most appropriate time to conduct the intervention (e.g., immediately after injury or after discharge from an acute setting) or the specific level of cognition that is necessary to engage in the intervention (e.g., ability to recall information). Further research is therefore required to determine more specifically what abilities a person requires to benefit from the intervention as well as the most appropriate context and time frame.

Conclusion

This paper describes an evidence-based approach of delivering feedback on occupational performance to people

with TBI. A video-plus-verbal-feedback intervention, incorporating the principles described here, may improve self-awareness and ultimately enhance occupational therapy outcomes following TBI. While this feedback may be a potentially confronting medium for delivering feedback, reassuringly, improvements in self-awareness following the intervention were not accompanied by an increase in emotional distress in the trial that demonstrated its effectiveness (Schmidt et al., 2013). Therefore, it is recommended that occupational therapists incorporate video plus verbal feedback using the principles and protocol described in this paper in the rehabilitation of people with impaired self-awareness following TBI.

Key Messages

- Impaired self-awareness can limit rehabilitation outcomes for people with traumatic brain injury (TBI); however, impairments in intellectual and online awareness are amenable to occupation-based intervention.
- Evidence from a randomized controlled trial indicates that video plus verbal feedback can improve self-awareness after TBI and intervention guidelines are provided to facilitate knowledge translation into occupational therapy practice.
- Theoretical models of self-awareness provide a useful basis for an occupation-based video-plus-verbal-feedback intervention to improve both online and intellectual awareness in people with TBI.

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Supplemental Material

The online appendices are available at <http://cjo.sagepub.com/supplemental>.

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