

CE

CONTINUING EDUCATION IMPROVING CONCUSSION CARE

BY STEPHANIE PAPPAS

Concussions are mild traumatic brain injuries (TBIs) accompanied by a change in brain functioning, ranging from temporary loss of consciousness to dizziness or memory loss. Once considered a mild inconvenience—as little as 2 decades ago, athletes were routinely sent back into play after a blow to the head—concussions are now recognized by medical professionals and the public alike as serious injuries.

What is less known, however, is that concussions are often marked by mental health issues, particularly anxiety and depression. And in situations where the injury was accompanied by a traumatic experience, as in intimate partner violence, the psychological consequences can be serious and difficult to untangle.

CE credits: 1

Learning objectives: After reading this article, CE candidates will be able to:

1. Define concussion and identify typical postconcussion symptoms.
2. Describe the importance of asking patients about their history of head injuries and the psychologist's role in treating some common symptoms.
3. Describe the gaps in concussion research and explain why social and biological factors can influence recovery from concussion.

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Regardless of the origin of the concussion, psychologists play a role in assessing symptoms and healing progress and can treat both emotional and cognitive symptoms during the recovery period. They can also educate individuals about the good news on concussions, said Anthony Kontos, PhD, a professor and research director of the University of Pittsburgh Medical Center Sports Medicine Concussion Program: that with assessment and targeted treatments in the first days after injury, most people recover fully within a few weeks, and that the subset of people who have persistent symptoms will also get better when treated appropriately.

“Psychologists in general are in a really good position to create better and more evidence-based awareness about the injury and its effects on patients,” Kontos said, “as well as debunking misinformation about the injury and its long-term effects.”

Each year, an estimated 1.6 million to 3.8 million people experience a blow to the head that causes a concussion (Langlois, J. A., et al., *The Journal of Head Trauma Rehabilitation*, Vol. 21, No. 5, 2006). This commonly used estimate inadvertently reveals how challenging concussion can be to understand: The estimate is based on extrapolation from the number of emergency room visits involving only a partial subset of head injuries, and the figure does not consider updated epidemiology. The number of diagnosed concussions has been rising in recent years, likely at least partially because of improving diagnostic practices (Langer, L., et al., *The*

Journal of Head Trauma Rehabilitation, Vol. 35, No. 1, 2020). As of 2020, 6.8% of children age 17 or younger had experienced a concussion or other brain injury in their lifetimes (*Concussions and Brain Injuries in Children: United States, 2020*, National Center for Health Statistics, 2021).

Though studies find different rates of recovery depending on context and the definition of recovery, an estimated 70% to 80% of people with concussion recover within a month, said William Barr, PhD, ABPP, a clinical neuropsychologist at the New York University Grossman School of Medicine. “The majority of people do recover within a few weeks, and that’s a pretty clear finding that is replicated in all contexts,” Barr said.

There are some demographic factors that influence recovery, Kontos said. Adolescents tend to recover more slowly than children or adults, he and his colleagues have found (*The Journal of Head Trauma Rehabilitation*, Vol. 34, No. 6, 2019). And treatment is very important, with faster recovery seen in those who receive care within 7 days of the injury (*JAMA Neurology*, Vol. 77, No. 4, 2020).

For those with longer-term symptoms, concussions can be a challenging experience. The most common complaints are memory and concentration struggles; physical symptoms such as dizziness, headache, and fatigue; and emotional and behavioral problems, particularly anxiety and depression (van der Vleugel, M., et al., *Journal of Clinical Medicine*, Vol. 10, No. 4, 2021). The treatment for this anxiety and depression is no different

from the treatment of anxiety and depression without a history of injury, but psychologists should know the person's history.

"If a person who sustains a mild TBI is seeking care from a psychologist, it's often because they're having symptoms that haven't gone away yet," said Kristen Dams-O'Connor, PhD, a clinical neuropsychologist and director of the Brain Injury Research Center at the Icahn School of Medicine at Mount Sinai in New York, using "mild traumatic brain injury" as a term scientifically interchangeable with "concussion." "The psychologist should be aware they're seeing someone who is in the maybe 20% of people who sustain a concussion who don't recover fully within the first days or couple of weeks."

For these patients, said Dams-O'Connor, it is important to validate the symptoms with "an attitude of hope."

"The research tells us that even though you aren't recovering as quickly as you want to, you are very likely going to recover fully," she said.

TREATING CONCUSSIONS

Sports-related concussions are the most thoroughly researched concussions, largely because these injuries are most easily recognized, and sports participation is conducive to longitudinal research studies. Much of the research and advice is centered around return to play.

People with concussion were once advised to go on full physical and mental rest, often in a darkened room, for days to weeks. Today, this treatment is recognized as both unnecessary



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and harmful, said Barr. Putting people with concussion in a dark room with instructions not to do anything leaves them vulnerable to increased anxiety and perseverating on their symptoms. "Complete rest is actually bad for you. It makes your symptoms worse," Barr said. "But people are still recommending it, and I'm seeing this all the time."

Kontos and his team have found that both physical activity and vestibular rehabilitation, including sets of exercises that integrate balance, bilateral motion, and eye gaze, speed concussion recovery (*The Journal of Pediatrics*, Vol. 239, 2021).

According to the International Conference on Concussion in Sport, light exercise 24 to 48 hours after a concussion, as long as it does not exacerbate symptoms, is beneficial. Likewise, avoiding screens may help for the first 48 hours post-injury, but

there is little evidence of benefit for reducing screen time after that. Clinicians should work with the concussed person to develop a plan for returning to regular activities, including work, school, or sports. These plans are based on the person's symptoms during both rest and exertion. Neuropsychologists may be involved in this process by assessing symptoms and recovery rate, while clinical psychologists can help clients find ways to adapt their activities during recovery.

When people experience persistent symptoms, Barr said, the strategy is to treat those specific symptoms. "Focusing on the symptoms themselves, rather than any general 'treatment of concussion' is one direction that things are going," he said.

Particularly relevant to psychologists' role in this process is the prevalence of anxiety and depression as a persistent

postconcussion symptom. A recent meta-analysis of 18 studies with 9,101 participants in all found that people with symptoms lasting longer than 4 weeks after injury were 4.5 times more likely than people who had recovered completely from their concussions to experience depressive symptoms (Lambert, M., et al., *JAMA Network Open*, Vol. 5, No. 12, 2022). This could be a direct consequence of injury to the amygdala or other emotion-processing regions of the brain, the researchers wrote, or the symptoms might be the result of struggles wrought by other postconcussion symptoms, such as social isolation or academic difficulties.

Studies of athletes also suggest that depression and anxiety symptoms are common in the first days to weeks after a concussion (Hammer, E., et al., *Sports Health*, Vol. 13, No. 1, 2021). Though the most common path is for these symptoms to resolve in the initial healing process, there are questions about whether a concussion history feeds into a risk profile for depression and suicide attempts in some subgroups of young

people. A cross-sectional cohort study using national Youth Risk Behavior Surveillance System data found that while depression symptoms were most associated with suicide risk, there was a higher risk of suicide attempts in females of Black, Hispanic/Latino, or multiracial heritage who had a history of concussion (Eagle, S. R., et al., *JAMA Network Open*, Vol. 5, No. 7, 2022). These findings were only correlational, the researchers wrote, and they did not probe into the prevalence of persistent concussion symptoms, but the numbers point to the need for more research into concussion impacts in underserved minority groups.

Anxiety and depression with concussion respond similarly to treatment as anxiety and depression without brain injury, Barr said. In particular, cognitive behavioral therapy can help people with a concussion history avoid catastrophizing their symptoms, he said.

The recent media attention on head injuries has raised awareness of concussion, Barr said, but also stoked many fears that concussion will lead to long-term

damage or later dementia. This is because people often conflate concussion with chronic traumatic encephalopathy (CTE), a degenerative brain disorder observed in autopsies of some National Football League players. The link between CTE and repetitive head injury is still not entirely clear, but the condition is not linked to concussion, Barr emphasized.

"Concussions are discrete events," he said. "What's being reported in the football players is the cumulative effect of participating in the sport. You have a job where you go to work and you hit your head a hundred times a day, but none of those hits are concussions."

Psychologists can play a role in keeping up to date with the literature around head injury and CTE and educating patients and families with accurate information, Barr said.

COMPLEX CONCUSSIONS

Concussion can be a very disruptive experience, especially when symptoms linger, said Robert Asarnow, PhD, a neuropsychologist and director of the University of California, Los Angeles Pediatric Traumatic Brain Injury Research Program. Asarnow said he has seen cases in which previously active athletes have their plans for future competition and education derailed by concussion symptoms that have not been properly treated. Clinical psychologists can help people with concussion cope with feelings of frustration and hopelessness, as well as helping them manage symptoms.

"A lot of what we do with patients is based on good

KEY POINTS

1
Around 80% of people with concussion recover within a month.

2
Commonly reported persistent concussion symptoms are cognitive (memory and attention problems), physical (dizziness, headache, fatigue), and emotional/behavioral (irritability, anxiety, depression).

3
Concussion recovery may be influenced by a variety of factors, from preexisting health conditions to access to care to sex and gender.

4
Intimate partner violence is a common and underreported cause of concussion.

An estimated 70% to 80% of concussion patients will recover within a month—but for the remaining 20% to 30%, concussions can bring frustrating, longer-term symptoms.



behavior regulation and management,” Kontos said. “Activity, sleep, stress management, hydration, and nutrition.”

Some of the somatic symptoms of concussion may also be manageable with psychological treatment. Spurred by a case involving a postconcussion complication, Asarnow now researches dysautonomia, or disruption of the automatic nervous system, postconcussion. He is currently an investigator on a multisite National Institute of Neurological Disorders and Stroke-funded grant that is looking to identify biomarkers for adolescents who experience complex, long-lasting symptoms from concussion. One possible measure under investigation, Asarnow said, is a test of pupil response that is a proxy for autonomic nervous system dysfunction. If the researchers can find evidence of autonomic nervous system dysfunction in people with persistent concussion symptoms, they may be able to treat the underlying problem.

“We’ve got very good treatments in psychology for anxiety and panic attacks, and many of those really are very helpful to dysautonomia, as well,” Asarnow said.

CONCUSSIONS FROM INTIMATE PARTNER VIOLENCE

While athletic programs now have a framework for handling head injuries, concussions that take place outside of formalized sports may go unrecognized. Nowhere is this truer than in the case of intimate partner violence (IPV).

“Most of the physical injuries in this context are to the head,

face, and neck,” said Angela Colantonio, PhD, OT, a professor at the University of Toronto who researches TBI in underserved populations. People in abusive relationships often experience multiple concussions alongside repeated lower-level blows to the head and strangulation injuries, all of which can damage the brain. Post-traumatic stress disorder symptoms can further overlap with brain injury symptoms. And the injuries occur in a context where identification and treatment are often a low priority: The IPV survivor may still be in danger from their abuser and may have immediate financial and legal concerns, such as ensuring they can keep custody of their children.

Despite the high frequency of head injury from IPV, experts know far less about concussion in that context compared with sports and recreation.

“There has been such an appalling gap in research here that we should all be furious and outraged and shouting from the rooftops,” Dams-O’Connor said. “The reality is, we just know far less, and what we have learned from the studies of male contact sport athletes, we should be extremely hesitant to apply to women in general. This is not the female equivalent of football.”

Regardless of the origin of a concussion, sex and gender differences may influence the outcome of the injury. The research on the impact of sex and gender in recovery from a concussion is mixed, but some evidence suggests women are at risk for a slower recovery. This finding may be driven in part by access

FURTHER READING

Intimate partner violence–related brain injury: Unmasking and addressing the gaps
Esopenko, C., et al.
Journal of Neurotrauma, 2024

Psychologists’ role in concussion assessments for children and adolescents in pediatric practice
Apple, R. W., et al.
International Journal of Environmental Research and Public Health, 2020

Concussion and psychological effects: A review of recent literature
Barela, M., et al.
Current Sports Medicine Reports, 2023

“I completely shut down”: A mixed-methods evaluation of the fear-avoidance model for young adults with a recent concussion and anxiety
Lovette, B. C., et al.
Rehabilitation Psychology, 2024

Believers versus deniers: The radicalization of sports concussion and chronic traumatic encephalopathy (CTE) science
Barr, W. B.
Canadian Psychology/Psychologie Canadienne, 2020

to care, said Carrie Esopenko, PhD, an associate professor and research psychologist in the Brain Injury Research Center at the Icahn School of Medicine at Mount Sinai. Women are more likely than men to report feeling dismissed when they describe their concussion symptoms to professionals, Colantonio said.

There is also evidence that women’s recovery may be more affected by hormonal factors compared with men. Women who sustain a mild TBI in the luteal phase (between ovulation and the beginning of menstruation) display worse outcomes than women injured at other points in their cycle (Wunderle, K., et al., *The Journal of Head Trauma Rehabilitation*, Vol. 29, No. 5, 2014). During the luteal phase of the menstrual cycle, the pituitary gland, which is tucked into the base of the brain, coordinates a higher concentration of progesterone in the blood. An impact to the pituitary may disrupt this progesterone spike, leading to progesterone withdrawal and thus a persistence of symptoms. However, Esopenko said, this is just a hypothesis.

“We truly need large, funded studies to be able to track cycles,” she said.

In a recent study using Concussion Assessment, Research and Education Consortium data, Esopenko and her colleagues found similar recovery trajectories between male and female athletes when female athletes had the same access to care as males (*Sports Medicine*, 2023). “For me, right now, that’s one of the biggest pushes we can make,” Esopenko said.

Access to care is extremely challenging in cases of IPV. “Women may not be aware that they’ve had a brain injury,” Colantonio said. “They may not be in a position to seek care. We have reports where care is sought out, but the perpetrator is present, and women are asked whether their partner did the injury in front of the partner.”

Often, women with a history of IPV do not see a psychologist until years later, said Dams-O'Connor. This may mean the psychologist has the opportunity to recognize a history of concussion and brain injury that has never been diagnosed before. Dams-O'Connor and her colleagues have developed a screening tool for IPV-related brain injury that asks specific questions: Instead of “Have you ever had a traumatic brain injury?” the screener uses context clues to remind people of events they might not have associated with head injury. For example, the screening tool asks if a sexual or intimate partner has ever shaken the person violently, hit them on the head with a fist or other object, strangled them, or hit their head into a surface such as the wall or floor. These detailed questions yield much higher reporting rates than more general screeners, Dams-O'Connor said.

“For a psychologist who is seeing someone who may have a history of IPV, whether or not they know about a potential head trauma history, asking these detailed questions is really important,” she said.

Colantonio and her colleagues have codeveloped a tool kit for front-line providers

Access to care is extremely challenging in cases of intimate partner violence. The IPV survivor may not even be aware they have had a concussion, and they may still be in danger from their abuser.

working at the intersection of IPV and TBI. Another organization focused on women and brain injury, PINK Concussions, also hosts and supports research and knowledge exchange on concussion in women.

Esopenko founded and leads a large research collaboration, the Enhancing Neuroimaging Genetics through Meta-Analysis (ENIGMA) Consortium Intimate Partner Violence Working Group, which includes Dams-O'Connor. The group has the goal of better understanding the consequences of IPV-related brain injury. Recently, Esopenko and her colleague Michael Ellis, MD, a neurosurgeon specializing in

RESOURCES

Abused & Brain Injured: A tool kit for front-line care providers for female survivors of intimate partner violence and brain injury
www.abitoolkit.ca

PINK Concussions: A nonprofit focused on brain injury in women, with links to resources, support groups, and research
www.pinkconcussions.com

IPV brain injury care, launched an educational offshoot, the ENIGMA IPV Global Knowledge Exchange Network, which holds regular virtual fireside chat sessions; their May chat was about mental health symptoms associated with brain injury, which will be followed by an education session in late July. The goal is to facilitate front-line service providers and community partners in learning from one another, Esopenko said.

“In the IPV world, I just don’t know how we could do this without social workers and psychologists,” she said. “There is just so much to unpack in what these individuals have been through.” ■

Enhancing Learning through Commitment to Change

Greg J. Neimeyer, Ph.D.

The rapid proliferation of new knowledge in psychology has placed renewed demands on professional practitioners to keep pace with ongoing advances. Overall, knowledge may remain current in professional psychology for as little as about 6-7 years, with more rapidly diminishing durability in key areas of practice, such as psychopharmacology, child health, forensics, substance use, or neuropsychology, among others (Neimeyer, Taylor & Rozensky, 2014). This means that, in the absence of a commitment to ongoing professional development, many practitioners may begin to experience knowledge obsolescence even while they are still in the early stages of their career (Neimeyer, Taylor & Rozensky, 2012).

BEST PRACTICES

In response, the field of professional psychology, together with other allied health professions, have redoubled their efforts to formulate sets of “best practices” that can enhance learning and the translation of that learning into practice (Institute on Medicine, 2010; Taylor and Neimeyer, 2017). The collective objective of these best practices is to enhance the comprehension, retention, and application of new knowledge in support of ongoing professional competence. Some of these practices focus on the value of adapting the learning strategies to individuals’ unique learning styles, presenting information multiple times utilizing different media, and providing opportunities for individuals’ input, application and behavioral rehearsal of the material, in addition to receiving peer, or instructor, review and feedback (Neimeyer & Taylor, 2014; Taylor and Neimeyer, 2017).

In addition to identifying current best practices, the allied health fields have long dedicated themselves to the development and evaluation of novel mechanisms for enhancing new learning, as well, drawing from a wide range of literatures with common objectives. Research within the science-of-learning, adult education, and performance enhancement literatures have been particularly productive in identifying and assessing novel methods of learning and facilitating the translation of that learning into

practice. *Benchmarking* and *self-assessment* are two examples of educational practices that have arisen as mechanisms designed to facilitate quality assurance and ongoing professional development (Neimeyer and Taylor, 2014).

Benchmarking and Self-Assessment. *Benchmarking* refers to the express comparison of one’s own work with the work of other professionals in the field. Benchmarking can be understood as the systematic process of evaluating work based on best practices and using evidence-based practice (EBP) to improve performance. In a typical benchmarking procedure, a psychologist might be given videotapes of peers who are conducting a procedure, such as a substance use screening. The videos are pre-determined to depict varying levels of quality. They might range from depicting relatively poor, informal questioning through more thorough, systematic, structured interviews. The psychologist is then asked to evaluate his or her screenings in relation to those he or she has seen, and given information about key components that are present, and absent, in each of the video “benchmarks.” Benchmarking provides an anchor against which psychologists can compare themselves, increasing the accuracy of their self-assessment and incorporating elements of the “higher” benchmarks into their own practice.

Research has demonstrated the effectiveness of benchmarking in relation to improving the accuracy of self-assessment, which is a critical pre-condition for evaluating current clinical skills and needs. Lane and Gottlieb (2004), for example, found that when medical residents viewed videotapes of their performance, their self-assessment accuracy increased significantly. And their accuracy increased still more when they watched the videos with a faculty member. Similarly, Martin et al., (1998) found that comparing one's own performance to the performance of others increased the accuracy of self-assessment. In their study, these researchers invited family practice residents to conduct mock interviews with a mother suspected of physically abusing her child. The residents were then asked to rate their performance. Next, residents watched their videotaped interview, in addition to watching four benchmark interviews depicting varying levels of competence. After watching the benchmark interviews, the relationship between the residents' self-ratings and the independent ratings of the supervisor was significantly stronger.

Self-assessment can take many different forms. All forms share in common express efforts to reflect upon, and evaluate, one's own current skills and/or future professional needs and interests. The Quality Assurance Program in Ontario, Canada, is one example of a well-articulated program of self-assessment (Morris, 2011). The Quality Assurance Program requires that each psychologist undertakes a self-review every other year, though the completion of a stipulated Self-Assessment Guide and a Continuing Professional Development Plan. Through a series of questions, psychologists critically evaluate their strengths, growth areas, and gaps in their learning. After conducting the self-assessment, they develop their own personal plan to remediate areas of identified weakness and to enhance their overall professional competence, sharing their plans with a colleague who reviews it and provides

input. The Continuing Professional Development Plan is designed to 1) promote continuing competence and quality improvement, 2) remedy gaps in knowledge and skills identified in the self-assessments, 3) address changes in practice environments and workplace needs, and 4) incorporate evolving standards of practice and advances in technology. These Continuing Professional Development Plans are subject to peer review by members of the College of Psychology of Ontario according to stipulated regulatory requirements.

Both benchmarking and self-assessment reflect the considerable effort that can accompany efforts designed to promote professional growth and development. Facilitating new learning, and the translation of that knowledge or skill into practice can be an effortful process, requiring reflection, formulation and deliberate application. Transitioning new learning to practice often requires an individual to reflect on how new knowledge or skills may apply to their own experience and to formulate ways in which the new material can be modified, adapted, or utilized within their own professional contexts or workplace environments. If the value of this effort is justified by the anticipated improvement or outcomes that may follow from it, then individuals are more prone to commit themselves to changes in what they do, or how they go about doing it.

Although some mechanisms for triggering change are designed to be intensive and may require considerable time, others are designed as brief reflective exercises that can occur immediately after, or even during, a learning event. A longstanding literature on the concept of a Commitment to Change illustrates the value of utilizing this simple technique in the service of generating greater learning and the translation of that learning into actual practice (Mazmanian & Mazmanian, 1999).

COMMITMENTS TO CHANGE (CTCS)

CTCs have been the subject of attention for the last few decades, but only recently have they been imported into the fields of allied health, or more recently still within psychology. CTCs are generally generated following an educational event such as attending a lecture, participating in a workshop, or reading an article (Wakefield, 2004). To complete a CTC, participants are asked to identify a set of possible changes they would like to make in their own practice based on the educational event. They are asked to formulate these changes in specific, behavioral form, which requires them to reflect on the relevance and applicability of the new information, and to adapt its application to their own interests and experience. They are then asked to indicate a level of commitment to each of the changes they have formulated, utilizing a rating scale that reflects their commitment to change, from low (1) to high (5). In the Commitment to Change procedure, participants are often reminded of their commitments 1-2 months

later, and asked to indicate if they actually enacted, or attempted to enact, each of their stipulated CTCs and to describe their experience or outcomes.

The effectiveness of the CTC procedure seems to be related to its three steps. The timing of the administration, immediately after the learning event, provides the participant an opportunity to reflect on the most salient elements of the material and to formulate it in terms that are most relevant to their own experience, interests, or needs. Rating the level of commitment provides a concrete mechanism for reflecting on the importance or value of the change, and anchors the individual in a level of expectation about completing it. And the subsequent follow-up provides a sense of accountability and the opportunity to reflect on the translation of the material into practice, or the barriers that may have impeded or prevented that translation.

THE BACKGROUND ON CTCs

CTCs have been the subject of attention in relation to the organizational change literature for several decades, as a tool for facilitating critical shifts in organizational structure, processes or style. Within the allied health literatures, medicine was among the first to explore the utility of CTCs as a mechanism for facilitating the translation of new knowledge into actual clinical practice. Within this literature, the actual performance of CTCs varies widely, from 47-87% (Wakefield, 2004), based on a number of identified factors. These factors include the extent to which individuals feel as if the CTCs are relatively easy to do, and the extent to which they feel as though they have personal control over completing them (Fidler et al., 1999, Lockyer et al., 2001). The greater the environmental or institutional constraints, the less likely individuals are to be able to follow through on their commitments and accomplish the behavioral changes they have formulated (Parochka and Paprockas, 2001). A number of studies have demonstrated that the CTC procedure can trigger actual changes in practice-related behavior, including the specific prescriptions that physicians write following educational programs (Wakefield et al., 2003), and the specific interventions utilized by occupational therapists over the course of their work with their clients (Lowe, Rappolt, Jaglal, & Macdonald, 2007).

The precise mechanisms involved in triggering this translation into practice are not fully known, but recent work has begun to address them. Herbert, Lowe and Rappolt (cited in Lowe, Hebert & Rappolt, 2009), for example, wondered whether reflection alone at the end of a new learning experience was sufficient to promote practice change, or whether the express formulation of a commitment of change was an essential element. Reflection has long been a key component of ongoing professional development programs, as reflected in the Mann et al., (2009) systematic review of reflection within continuing medication education courses. In their study, Hebert et al. (2009) asked half of their participants to complete CTCs while the other half

were prompted to reflect on the workshop using the Critical Incident Questionnaire (CIQ). Two months following the workshop, there was a modest difference favoring the CTC group over the reflection-only group. The percentage of those who demonstrated significant change was significant in both groups, but it favored those who had formulated specific commitments to change. Overall, 67% of the individuals who used CTCs made changes in practice, compared to 50% of those in the CIQ group who reported doing likewise.

A recent study of the relationship between reflection and behavior change in continuing medical education provides further evidence in this regard (Ratelle, et al., 2017). In a cohort study of attendees at a national hospital continuing medical education course, 223 participants provided reflection scores for each presentation they attended, and formulated commitment-to-change statements at the conclusion of each course. Reflection scores consisted of ratings, on a 5-point scale, about the extent to which the presentation had prompted reflection, re-consideration, deliberation or critical re-evaluation of their practices. A 3-month post-course survey was conducted to determine whether planned CTCs were successfully implemented, and whether they were related to higher levels of reflection.

Overall, participants indicated that 65.5% of the CTC statements were implemented. Reflection scores correlated significantly with the number of planned CTC statements ($r=.65$, $p<.01$), suggesting the potential role of the CTC procedure in enhancing reflection and, potentially, translation into actual practice. In addition, higher reflection scores were related to the greater availability of opportunities for audience response and the use of clinical case illustrations. The researchers concluded that, “we found that reflection strongly correlates with CTC” and that “continuing education “curricula that stimulate reflections may actually promote positive patient care behaviors” (Ratelle et al., 2017, p. 166).

SUMMARY

Educators or learners who are interested in enhancing learning, and the translation of that learning into practice, may increase the retention and translation of material by incorporating CTCs into their programs. Although the overall effectiveness of CTCs as a tool to enhance the integration of new learning into practice is still under study, the current evidence is promising. The incorporation of simple reflective questions into a learning experience may itself be useful, as when the psychologist asks, “How can I use this new knowledge?”, “How does this apply to my practice and to what I do?”, or “What might I do differently based on what I have learned today?” Although simple reflection itself appears to facilitate both learning and the translation of that learning into practice, the express formulation of potential changes and a commitment to those changes may add further value (Lowe et al., 2009). Overall,

the formulation of CTCs represents a relatively simple mechanism for promoting reflection, anchoring expectations regarding adoption, and leveraging new learning into novel practice behaviors. Simple extensions to the CTC procedure that may provide additional benefit include conducting surveys of post-course behaviors to assess compliance with the CTCs, encouraging reports to colleagues or other peers regarding CTCs in order to build in additional elements of accountability, or establishing timelines for the completion of CTCs. With continued utilization and examination, Commitment-to-Change procedures may join the ranks of other processes, procedures and techniques that jointly constitute what has increasingly come to be recognized as the set of “Best Practices” in the field of ongoing professional education and continuing professional competence.

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