Abstract This case series introduces the desensitization of triggers and urge reprocessing (DeTUR), as a promising adjunctive therapy in addition to comprehensive treatment package for pathological gambling. This addiction protocol of eye movement desensitization and reprocessing was delivered to four male inpatients admitted to a 10-week inpatient program for pathological gambling. The therapist gave three 60-min weekly sessions of the DeTUR using bilateral stimulation (horizontal eye movements or alternative tactile stimuli) focusing on the hierarchy of triggering situations and the urge to initiate gambling behaviors. After treatment, self-reported gambling symptoms, depression, anxiety, and impulsiveness were all improved, and all the participants reported satisfaction with the therapy. They were followed up for 6 months and all maintained their abstinence from gambling and their symptomatic improvements. Given the efficiency (i.e., brevity and efficacy) of the treatment, a controlled study to confirm the effects of the DeTUR on pathological gambling would be justified.

Keywords Pathological gambling · Treatment · EMDR · DeTUR · Psychotherapy

Although controversy still exists as to whether pathological gambling (PG) is an impulse control disorder or a form of addiction (Denis et al. 2012), the literature has consistently reported its devastating effects on the individual and on society (Ladouceur et al. 1994). In
a meta-analysis of 119 studies, the life-time prevalence of adult PG in North America was estimated to be 1.6 and 1.1 % during the previous year (Shaffer et al. 1999). Additionally, problematic gambling (a subclinical form of PG) had a life-time prevalence of 3.9 % and past-year prevalence of 2.8 %. Despite these facts, only about 10 % of pathological gamblers are believed to seek treatment or attend Gamblers Anonymous (Slutske2006). Such low engagement implies that more effort is needed to enhance patients’ motivation and improve their access to treatment.

Although various psychological treatments for PG have become available, including cognitive behavioral therapy (CBT), motivational interviewing therapy, and integrative therapy, among others (Cowlishaw et al. 2012; Pallesen et al. 2005; Toneatto and Ladoceur 2003), most interventions have not undergone strict empirical validation (Rizeanu 2012). The only evidence-based treatment for PG is CBT (Gooding and Tarrier 2009). And other treatments, brief interventions, motivational enhancement interventions, and the 12-step Gambler Anonymous program have been reported as effective (Stea and Hodgins2011). Although there is no approved pharmacological treatment of pathological gambling disorders, opioid antagonists were found effective in several placebo controlled studies. Other studies have linked anticonvulsants and selective serotonin re-uptake inhibitors to favorable outcomes (Achab and Khazaal2011; Leung and Cottler 2009).

Previous research on the treatment of PG has suffered from several limitations. Firstly, most studies have fallen short of methodological soundness. A review of controlled studies of psychotherapeutic interventions for PG found that more than 75 % of all articles provided insufficient information about their participants and group assignment (Fink et al. 2012). Secondly, there are no well-designed primary instruments that measure therapeutic effectiveness rather than problems associated with excessive gambling or secondary gambling problems (Walker2005). Thirdly, many studies have failed to provide the intention-to-treat analysis and they lacked long-term follow-up (Walker 1992).

Among recently developed psychotherapies, eye movement desensitization and reprocessing (EMDR) has shown promise as a potential treatment for PG. It is a specialized form of psychotherapy currently evidenced for treatment of post-traumatic stress disorder (PTSD) (Bisson and Andrew 2007). Its unique component (i.e., reprocessing) follows an initial brief exposure to a traumatic memory: the patient is asked to attend simultaneously to a traumatic memory and to an alternative visual, auditory, or tactile bilateral stimulus (BLS). Subsequently, spontaneous associations are repeated until the discomfort associated with the memory dissipates. The most commonly used sensory stimulus is horizontal saccadic eye movement, where the patients move their eyes side to side to follow the therapist’s fingers in a set of about 24 repetitions (Shapiro2001).

In a small non-randomized, controlled study of 22 outpatients with PG, Henry (1996) demonstrated the superiority of 1-4 sessions of EMDR over the wait-list control receiving treatment-as-usual (standard cognitively oriented psychotherapy) at decreasing the frequency of gambling events. However, these results should be viewed with caution, as there may have affected by selection bias due to the lack of randomization, possible effects of pre-EMDR treatments, and insufficient outcome measures (e.g., only the number of self-reported gambling events). Interestingly, that study applied the standard EMDR trauma protocol to target exclusively traumatic or distressing events, and did not deal with any subjects associated with gambling.

In addition to the standard EMDR protocol used in the treatment of PTSD or trauma-related conditions, Popky (2009) developed a variant procedure for substance use or behavioral addiction. There are case reports of this technique being used for chemical dependency (Popky 2005), sex addiction (Barbieri 2008), and internet addiction disorder
Unlike standard EMDR, which targets and processes traumatic memories, the desensitization of triggers and urge reprocessing (DeTUR) desensitizes and reprocesses the triggers and urges that evoke addictive or compulsive behaviors. As in exposure therapy, a hierarchy of triggers is first constructed with the client, and from the lowest urge to the highest, each trigger is desensitized until the urge becomes zero. DeTUR differs from exposure therapy in that it does not repeatedly focus on the cue but rather moves with the client’s spontaneous free associations, and uses BLS as part of the process. Unlike other therapies that focus on cognition and emotion, it deals only with the level of urge (LOU) and body sensations. Of the 12 steps of the DeTUR protocol, the first seven steps are delivered at the initial session before desensitization begins. They are: (1) building rapport, (2) history and assessment, (3) identifying support resources, (4) accessing internal resources, (5) identifying positive treatment goals, (6) identifying positive states, and (7) identifying the known triggers. The next three steps are repeated for each trigger: (8) desensitizing the triggers, (9) installing a positive state, and (10) testing future situation. Each session ends with (11) closure and self-work, and the client and the therapist meet for (12) follow-up sessions (Popky 2009).

The DeTUR protocol may offer several advantages in the treatment of addiction, and particularly for behavior addiction. First, although abstinence is preferred, better control of urge is the goal of DeTUR. This is more consistent with the environment encountered by normal internet users, the majority of whom routinely use internet games in their daily lives. Studies have suggested that, in pathological gamblers, controlled gambling can be a good substitute for abstinence (Ladouceur et al. 2009). Second, rather than directing the patient’s attention to negative behaviors, it is directed towards a positive, attractive, and achievable goal, early on in the treatment. Shame and denial have been suggested as important barriers to change in pathological gamblers (Evans and Delfabbro 2005). In this sense, DeTUR may foster engagement in therapy and enhance the patient’s motivation to change. Moreover, DeTUR employs ego strength and empowerment techniques to build self-regulation skills at the start of treatment. Self-regulation skills were highlighted as an important resource in the treatment of PG in a recent study (Moore et al. 2012). The aim of our research was to apply the DeTUR protocol to four inpatients with PG, as an adjunctive therapy to regular treatment.

**Methods**

**Participants and Treatment Setting**

Participants were recruited from the Addiction Treatment and Rehabilitation Center of St Andrew’s Psychiatric Hospital, Icheon, South Korea. The inpatient program for pathological gamblers is a 10-week group-based program that includes cognitive behavioral therapy, motivation enhancement (ME), lectures, psychodrama, meditation, and Gamblers Anonymous (GA). In the first 2 weeks, the patients complete a preparatory course that consists of 8 h of therapy per week. They then can volunteer to move on to the next course of 8 weeks with 20 h of therapy per week. Usually the program runs with five to ten inpatients. In February 2012, four new patients were admitted and placed under the care of the first author. All four patients fulfilled the DSM-IV criteria for PG, and had no comorbid conditions such as depression or PTSD. The patients gave their informed consent to receive EMDR during the course of their hospitalization. All four patients continued to receive the treatment as usual during and after DeTUR.
Case 1 was a 47-year-old man. He was married, with two teenage daughters and formerly worked as an engineer for a construction company. Several years previously he started betting on horse races, and the amount he lost gradually grew. He began taking loans from acquaintances and banks only to lose them in gambling. With most of his time and energy devoted to gambling, he lost his job, and his debts became unmanageable. He confessed to his wife, and seeing no other way out, they decided to commit suicide together. Fortunately, the attempt failed, and they sought financial help. Even with official aid, he struggled to manage his debts and he decided to seek treatment for his gambling problem.

Case 2 was a 53-year-old man who used to run a small business. He had gambled from his youth but never considered it an addiction. Ten years previously, after accidentally winning 10,000 dollars in a casino, he became addicted to various gambling activities. He favored slot machines, but he also liked card games like blackjack or poker, and video gambling machines. His business failed for many reasons but gambling prevented him from becoming successful again. As a result he got divorced and went bankrupt. He took on manual labor to make a living, but whenever he earned money more than 1,000 dollars, he would spend it in the casino. Finally he decided to seek professional help at a counseling center, and the counselor recommended psychiatric admission.

Case 3 was a 52-year-old man who had been a high-ranking business executive in a major company. Ten years previously he had started to bet on horse and cycle races, and ended up spending most of his time gambling. As a result, he was divorced, fired from his job, and sued for a loan he had taken out to fund his behavior. He tried to break the habit, but whenever he had even a small amount of money, he could not resist buying tickets. Despite his relatives’ support, he struggled to stave off the legal consequences of his gambling, and he volunteered to be admitted to a psychiatric hospital.

Case 4 was a 34-year-old man. He had studied to be an engineer, and after getting his degree he had taken a job in Australia. Every week after receiving his wage, he would go to a club with his coworkers to play slot machines. At some point his gambling became so excessive that he lost all his income, and he had to return to Korea. After that he did not gamble for about a year, but then started to visit a casino whenever he was stressed at work or in a conflict with his parents. He lost almost all of his income gambling. Initially he continued working, but eventually his all-night visits to the casino started to cause absences at work, and he was fired. Subsequently he was unable to find a good job; he became desperate and angry with himself to the point of contemplating suicide. He visited to a counseling center and was recommended for psychiatric admission.

Assessment

The participants completed self-report questionnaires at four points during the study: before treatment, at the mid-point, immediately after completing treatment, and 6 months later. Besides gambling-related symptom, depression and anxiety symptoms were also measured as these often accompany PG (Lorains et al. 2011). Impulsivity was assessed as PG is often considered as impulse control disorder (American Psychiatric Association 1994). The questionnaires included the Gambling Symptom Assessment Scale (G-SAS) (Kim et al. 2009), the Barratt impulsiveness scale (BIS-11) (Patton et al. 1995), the Self-Rating Depression Scale (Zung 1965), and the Self-Rating Anxiety Scale (Zung 1971). The translated versions of these scales had been validated previously (Kim et al. 2005; Lee 1992, 1995, 1996).
**The Gambling Symptom Assessment Scale**

This 12-item self-reported questionnaire aims to estimate the symptoms of PG. It is not intended for diagnosing or screening for the condition, but for assessing changes after treatment. It investigates the urge, thoughts, time, emotions, and negative consequences associated with gambling during the past 7 days. The scores for each item range from 0 to 4, with a total score of 0–48. Developers of the scale suggested that symptom severity should be categorized as mild (8–20), moderate (21–30), severe (31–40) and extreme (41–48) (Kim et al. 2009).

**The Barratt Impulsiveness Scale**

BIS-11 is a 30-item self-report questionnaire developed to measure impulsiveness on a scale of 1 (rarely/never) to 4 (almost always/always). Higher scores mean higher impulsiveness, and the scale evaluates three aspects: attentional, motor and non-planning impulsiveness (Patton et al. 1995).

**The Self-rating Depression Scale**

This 20-items questionnaire was developed to measure the symptoms of depression. There are 10 negatively- and 10 positively-worded questions. The score can range from 1 to 4, with a total score of 20–80. Zung recommended a score of 40 as the cut-off point in depression screening (Zung 1965).

**The Self-rating Anxiety Scale**

This measure of anxiety has 20 items (including 5 negatively-worded). The respondent is asked how much the statement applied to him or her during the past several days on a Likert-type scale of 1(‘none of the time’) to 4(‘most of the time’). The total score can be between 20 and 80, and 36 was suggested as the cut-off score in anxiety screening (Zung 1971).

**Treatment**

DeTUR treatment began in the 3rd or 4th week of hospitalization after the participants had completed the initial 2-week course of treatment-as-usual consisting of psychoeducation and coping skill trainings. Three 60-min sessions were delivered weekly by the first author. The first session consisted of resource building and establishing a positive treatment goal (steps 1–5). The second and third sessions involved identifying triggers and desensitizing them (steps 6–12). This process is summarized in Table 1. During the course of their hospitalization, the patients did not take any psychotropic medication, and they were all discharged after completing 10-week program.

**Vignette (Case 4)**

The first three steps (building rapport, taking history, and identifying support resources) were parts of routine patient intake process; therefore, session 1 began with step 4 (accessing internal resources). The patient could not recollect any time in his life when he felt resourceful or had a sense of control, but he managed to bring up an image of a
rhinoceros eating grass in the middle of a meadow. He said he wanted to be like the animal because it stands on its own and keeps going straight and upright. When enhanced by BLS, this image gave him a sense of self-regulation and control. Next, a positive treatment goal was selected: living in a house by a quiet beach and fishing peacefully. This image and the accompanying sensory elements (i.e., sounds of waves, smell of the sea, and sense of calm and relaxation) were reinforced with BLS. After this phase, the patient identified four triggers of the urge to gamble: (T1) a pay day with money, free time, feeling lonely and bored (level of urge, LOU 2–3); (T2) playing a competitive game (e.g., billiards) (LOU 3–4); (T3) quarreling with his mother on the phone (LOU 5–6); (T4) when a coworker and especially his boss, says “Let’s go” (LOU 8–9).

Session 2 was devoted to tackling the first trigger (T1) with LOU 2–3 and the accompanying bodily sensations. After five sets of BLS, LOU became 0. The patient said, “I feel a sense of regret. I hate that feeling so bad after losing all my money.” During the installation phase, he associated this trigger with ‘feeling good about himself’. And during the future check, he said he would not act on this trigger and do something else. He stated that playing a competitive game (T2) was longer valid and his therapy moved on to the next trigger (T3), with LOU = 5–6.

Patient: I feel so stressed.
Therapist: Go with that.
Patient: Pissed off. I have a feeling like I should be doing something. When I have this feeling and find there is nothing to do, I usually think of gambling.
Therapist: Go with that.
Patient: Maybe my thoughts about gambling will go away. If I don’t have the craving to be doing something, I won’t go gambling.
Therapist: Go with that.
Patient: I feel that I’m a little removed from the pressure that I should be doing something. There is less pressure.
Therapist: Go with that.
Patient: I think I feel less emotion about my mother. I feel a kind of distance from it.
Therapist: What is your LOU now?
Patient: Maybe two. I want to find something else. It would prevent me from gambling.
Therapist: Go with that.
Patient: Now I feel calm. My urge is 0–1. Now I’m not thinking about it.
Therapist: Go with that.
Patient: The pressure that I should be doing something is gone. I usually let go of the stress but the only exception was my mother. I think I can be more relaxed toward her. Why did I get so stressed about my mother?
Therapist: Go with that.
Patient: I feel good. I think I’m liberated from my mother.

The following week’s session 3 focused on the final trigger (T4). The patient’s friends knew about his problem, and therefore, they would not have encouraged him to go gambling. But his boss had said “Let’s go”, it would have been very difficult to say no. The patient would then rationalize his urge to gamble as indulgence. The corresponding LOU was 6–7, and the urge was felt in his head.

Patient: I’m hesitating. To go or not to go.
Therapist: Go with that.
Patient: Negative consequences of gambling. Bad outcomes emerge. I am beginning to think that although I rationalize it, I will be hurt in the long run.

_Therapist: Go with that._

Patient: The urge goes down. Why worry? The result will be just the same after all.

_Therapist: Go with that._

Patient: I feel calm as usual.

_Therapist: What is your LOU now?_

Patient: None. I wouldn’t rationalize it but turn it down. I’m not the kind of person who can’t say no. The problem for me is the urge.

During a later session the urge was still zero when he imaged himself confronting the trigger in the future and the patient was able to connect with the installed positive state. A week later, the patient reported that he felt so peaceful after DeTUR and that he felt no urge at all.

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**Results**

Table 1 summarizes the changes in gambling symptoms, impulsiveness, depression, and anxiety experienced by the patients before and after treatment. The largest decline was noted in gambling symptoms (70–100 %), followed by anxiety (26–43 %), depression (5–49 %), and impulsiveness (2–33 %). Figure 1 shows the sequential changes in gambling symptoms at four points: before, during, and after treatment, at the 6-month follow-up. A sharp decrease was observed after the first session in three participants.

**Follow-Up**

Six months after completing DeTUR, the patients were asked to complete the Gambling Symptoms Assessment Scale with the therapist. One patient (Case 1) completed this assessment during an outpatient visit, and the others over the phone. All four had abstained from gambling and their urge was none or minimal, which suggests that the therapeutic effect was maintained.

The financial situation of the first patient (Case 1) had not improved, but he had not been gambling. He reported attending GA at least twice a week and working part-time as a chauffeur. After discharge, Case 2 started a new business and was very busy with frequent trips to China, which prevented him from attending the hospital visit. He said that he had not gambled since leaving the hospital. Case 3 also reported that he had abstained from gambling and had been attending GA regularly. He explained that he could not make time to visit the hospital during daytime due to a new job. Case 4 took a job abroad and had not participated in any gambling activities. He thanked the therapist for DeTUR and said he would return for an assessment in 1 year, once his contract abroad had ended. Case 2 and 4 did not receive any treatments after discharge.

**Discussion**

This study investigated the DeTUR, an addiction protocol of EMDR in four patients with PG. With respect to treatment duration, previous research found that CBT required a median of 14.5 sessions (16.9 h) in pathological gamblers (Gooding and Tarrier 2009). The
<table>
<thead>
<tr>
<th>Case</th>
<th>Sex/age, years</th>
<th>Main gambling activity</th>
<th>Internal resources</th>
<th>Positive goals</th>
<th>Major triggers (LOU)</th>
<th>Total scores before versus after treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M/47</td>
<td>Slot machines</td>
<td>His family</td>
<td>Working on a construction site as a manager</td>
<td>1. alone on the weekend (5) 2. unexpected money (8) 3. in need of money (10)</td>
<td>Gambling symptoms: 47 versus 0 48 versus 44 61 versus 31 40 versus 23</td>
</tr>
<tr>
<td>2</td>
<td>M/53</td>
<td>Horse races</td>
<td>Working as a manager</td>
<td>Running a restaurant</td>
<td>1. bored (3) 2. arguing with family (7) 3. unexpected money (8)</td>
<td>Impulsiveness: 48 versus 44 52 versus 44 41 versus 39 42 versus 29</td>
</tr>
<tr>
<td>3</td>
<td>M/52</td>
<td>Horse or bicycle races</td>
<td>His mother</td>
<td>Traveling with his two daughters</td>
<td>1. bored on the weekend (4) 2. news on racing (6) 3. having extra money(8) 4. in need of money (10)</td>
<td>Depression: 61 versus 31 41 versus 39 38 versus 34 30 versus 22</td>
</tr>
<tr>
<td>4</td>
<td>M/34</td>
<td>Slot machines</td>
<td>Rhinoceros</td>
<td>Having his own house on a quiet coast</td>
<td>1. pay day (2 - 3) 2. arguing with mother (5 - 6)</td>
<td>Anxiety: 40 versus 23 42 versus 29 30 versus 22 27 versus 20</td>
</tr>
</tbody>
</table>

**Table 1** Summary of DeTUR treatment in patients with pathological gambling

DeTUR Desensitization of triggers and urge reduction

*a* The Gambling Symptom Assessment Scale  
*b* The Barratt Impulsivity Scale  
*c* The Self-rating Depression Scale  
*d* The Self-rating Anxiety Scale
duration of other psychotherapies, such as eclectic therapy and imaginal exposure, has been similar or longer than that of CBT (Pallesen et al. 2005). In our study, the average treatment time was three sessions (3 h), which is comparable to the two sessions (1.5 h) of the standard EMDR protocol for pathological gamblers (Henry 1996), and to the three sessions (2.3 h) of DeTUR for internet addiction disorder (Bae and Kim 2012).

In terms of efficacy, EMDR in the treatment of PTSD is significantly faster at eliciting a response than CBT (Nijdam et al. 2012) or Prolonged Exposure (Ironson et al. 2002), but the reason why is unclear at this time. Some authors believe that therapies such as EMDR or body psychotherapy, which access sensorimotor elements from the brain stem (i.e., bottom-up processing), play a role in the faster treatment response compared to cognitive therapies of the top-down nature (Ogden et al. 2006). In DeTUR, an urge is expressed in terms of bodily sensations, and the patient begins to freely associate from there. Previously, it has been demonstrated that a reduction in physiological arousal is strongly correlated with a reduction in gambling symptoms (Freidenberg et al. 2002). It is possible that accessing and processing bodily sensations (i.e., physiological arousal) in DeTUR play a role in the rapid improvement. There are some similarities between DeTUR and imaginal cue exposure in that both treatments set up a hierarchy of triggers and expose the patient to each of them. The difference, however, is that DeTUR exposes the patient to the trigger briefly and induces a spontaneous association with the help of BLS e.g., horizontal eye movements or alternative tactile stimuli (Rogers and Silver 2002).

Two participants in our study reported a sharp decrease in their gambling symptoms after just one session, prior to trigger desensitization (Fig. 1). As explained above, during

![Graph](image-url)
first session the therapist tries to build and enhance psychological resources that will empower and motivate the patient to change. Empowerment and enhancement of motivation have previously been identified as important aspects of addiction treatment (Rubak et al. 2005). One study showed that shame and denial were the most important barriers to change among problem gamblers (Evans and Delfabbro 2005). Consequently, the non-judgmental and less confrontational approach of DeTUR is thought to be one of its main benefits (Bae and Kim 2012).

Although abstinence is not a necessary condition or goal of DeTUR treatment, all four patients showed spontaneous of their gambling behavior and abstained from gambling at least 6 months after completing treatment. Additionally, all patients identified common or very similar triggers such as boredom, the need for money, unexpected income and arguments with the family. These and similar motivators for gambling had been identified in previous studies (Blaszczynski et al. 1990; Holub et al. 2005).

Compared with the marked decrease in gambling symptoms, symptoms of anxiety and depression decreased only moderately. This may be because their initial levels were mild to moderate, and since the minimum total score on their respective scales was 20, the observed change appeared less prominent when expressed as a percentage. Impulsiveness symptoms changed the least, which may be because the original instrument measures impulsiveness as a trait, while DeTUR focuses on the state of urge concerned with specific triggers.

At present, it is unclear whether patients with PG benefit more from the standard EMDR trauma protocol or from DeTUR. A significant proportion of pathological gamblers are thought to have experienced traumatic events and PTSD. In a study of treatment-seeking pathological gamblers, about one-third were diagnosed with PTSD, which was linked to gambling severity (Ledgerwood and Petry 2006). However, as reported by Henry (1996), the trauma protocol helped to reduce the frequency of gambling only in patients with history of trauma. Thus, while standard EMDR may work for pathological gamblers with comorbid PTSD, it does not appear to work for those without it. It is worth noting that Popky (2005) recommended using the standard protocol first, followed by DeTUR in patients with a history of both addiction and trauma, because this combination achieved better results than either therapy alone in his small controlled trial.

By virtue of its design (case series without a control group, without a collateral source of information, and based on self-reported outcomes), this study has limited generalizability. Additionally, accessing gambling symptoms immediately after treatment may be problematic due to the fact that patients were hospitalized and protected against gambling stimuli. Another limitation may be that all four patients in our study were motivated to seek treatment and had no psychiatric comorbidities. Finally, a follow-up interval of 6 months may be too short to monitor the patients for a possible relapse.

Despite its limitations, DeTUR seems to be a promising treatment option for patients with PG. It achieved a positive effect within a short time, without extra hours of homework outside the sessions, and by using a less confrontational and more motivational approach. Although the potential effects of other treatments should be considered, the improvement in the self-report measures and the clinical impression after DeTUR suggest that DeTUR had at least additive value in the treatment of PG. That being said, many patients with a similar profile enter our inpatient program and they often leave the hospital without improvement.

This case series introduced DeTUR as a possible short-term psychotherapy for PG that can be incorporated to the routine treatment package including CBT, ME, and GA. Brief duration of treatment and less confrontational nature suggest that DeTUR can be delivered...
to wider population of pathological gamblers including those who show denial or less motivation to the PG treatment. In the future, randomized controlled trials in a larger group of pathological gamblers are needed to determine effectiveness of this technique over treatment-as-usual or other established treatment such as CBT.

References


