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Cognitive restructuring of gambling-related thoughts: A systematic review

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HIGHLIGHTS

- The most used technique to facilitate cognitive restructuring is exposure.
- Few studies evaluate thoughts to measure efficiency of their interventions.
- Face-to-face interventions possibly present benefits for clinical work on thoughts.
- It seems that cognitive restructuring has not been adapted for skill game players.

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ABSTRACT

Gamblers' thoughts have a fundamental influence on their gambling problem. Cognitive restructuring is the intervention of choice to correct those thoughts. However, certain difficulties are noted in the application of cognitive restructuring techniques and the comprehension of their guidelines. Furthermore, the increase of skill game players (e.g. poker) entering treatment creates a challenge for therapists, as these gamblers present with different thoughts than those of the gamblers usually encountered in treatment (e.g. chance-only games like electronic gambling machines). This systematic review aims to describe how cognitive restructuring is carried out with gamblers based on the evidence available in empirical studies that include cognitive interventions for gambling. Of the 2607 studies collected, 39 were retained. The results highlight exposure as the most frequently used technique to facilitate identification of gambling-related thoughts (imaginal = 28.2%; in vivo = 10.3%). More than half of the studies (69.2%) clearly reported therapeutic techniques aimed to correct gamblers' thoughts, of which 37% involved visual support to challenge those thoughts (e.g. *ABC* log). Of the 39 studies retained, 48.7% included skill game players (i.e., poker, blackjack, sports betting) in their sample. However, none of these studies mentioned whether cognitive restructuring had been adapted for these gamblers. Several terms referring to gamblers' thoughts were used interchangeably (e.g. erroneous, dysfunctional or inadequate thoughts), although each of these terms could refer to specific content. Clinical implications of the results are discussed with regard to the needs of therapists. This review also suggests recommendations for future research.

1. Introduction

The results of systematic reviews and meta-analyses suggest that cognitive-behavioral therapy (CBT) is the treatment method of choice for gambling problems (Brewer, Grant, & Potenza, 2008; Cowlishaw et al., 2012). CBT is offered in individual or group format, with interventions occurring either in a face-to-face context with a therapist or auto-administered by the gambler himself (consulting a self-help manual, with or without support; Swan & Hodgins, 2015). It integrates cognitive and behavioral interventions, namely cognitive restructuring, which is the active ingredient in the treatment of gambling problems (Ladouceur, Sylvain, Letarte, Giroux, & Jacques, 1998). Cognitive restructuring (CR) consists in assisting the gambler in the identification and the correction of thoughts that contribute to gambling disorder. Considering that these thoughts have an important role in the etiology and maintenance of gambling problems (Fortune & Goodie, 2012; Gaboury & Ladouceur, 1989), by addressing these dysfunctional thoughts in treatment, the ensuing gambling behaviours should be reduced (Beck, 1963; Korn & Shaffer, 2004).

Though CR is a technique of choice for treating dysfunctional thoughts, certain difficulties are met in the application and the comprehension of the guidelines, namely by gambling counsellors (Lafond & Brisson, 2007). According to a literature review by Blaszczynski (2005), treatment objectives with gamblers in clinical

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studies are rarely mentioned explicitly. It seems logical to think that when CR is applied, the aim is to reduce the dysfunctional thoughts. To measure the efficiency of the intervention, the gamblers' thoughts would be evaluated at a certain time in post-treatment. However, certain studies that assess the efficiency of CR with gamblers did not include measures that address gamblers' thoughts. Despite this fact, these studies show that their intervention is efficient in treatment on a symptomatic or behavioral level (Grall-Bronnec, Poudat, & Vénisse, 2009; Ladouceur et al., 2001), which is notable considering that gambling disorder manifests on a behavioral level. But can this conclusion be generalized to all clinical studies that include cognitive restructuring sessions? Further, although CBT can be practiced in group format (Beck, 2011; Jiménez-Murcia et al., 2007), the gambler's thoughts are subjective and relative to each individual (Beck, 1963). Thus, certain questions are warranted: is CR, an intervention that is specific for addressing thoughts, also applied in a group setting? To date, no systematic literature review has documented the applications, guidelines and components of cognitive restructuring to provide counsellors and researchers with a complete view of this issue.

In addition to these questions, there is a gap in empirical knowledge on the application of CR with gamblers that choose activities involving a part of skill (e.g. poker, blackjack, sports betting), and this, despite their increasing popularity and the resulting upsurge in scientific studies (Dubé et al., 2009; Kairouz, Nadeau, & Robillard, 2014). The thoughts of gamblers that participate in gambling activities that involve some skills would forcibly be different from the thoughts of gamblers that choose games of pure chance (Brochu, Sévigny, & Giroux, 2015; Delfabbro, 2004; Levesque, Sévigny, Jacques, & Giroux, 2016). However, knowledge concerning the thoughts of these gamblers is limited. None of the instruments that have been developed specifically for the assessment of these gamblers have been validated (Brochu et al., 2015; Sévigny, Mercier, Jacques, Cantinotti, & Giroux, 2016). Also, questionnaires that assess gambling's dysfunctional thoughts in general include items that relate to the perception of skill. These can be endorsed by gamblers that choose activities that require a part of skill and consequently be falsely interpreted as an erroneous thought to be corrected (Levesque et al., 2016). The absence of measures specifically developed for this distinct group of gamblers raises the question of how their specific thoughts are addressed when CR is applied.

In light of the previous questions, the objective of this systematic review is to summarize the state of current knowledge on CR applied with gamblers that participate in clinical studies. More specifically, this study aims to: (a) identify treatment objectives and the indicators that were used to measure the efficiency of CR; (b) describe the modalities of application (e.g. individual, group, auto-administered treatment); (c) identify the techniques/instruments used to identify and correct thoughts, and (d) describe the way authors considered different forms of gambling activities in the application of CR (e.g. games that involve a part of skill).

Due to the inclination of authors in gambling studies to use various terminologies to refer to gamblers' thoughts that contribute to the development and maintenance of gambling disorder (e.g. erroneous, dysfunctional, inadequate thoughts; see literature review of Barrault & Varescon, 2012), a secondary objective is to identify the set of terminologies employed in the studies to refer to these thoughts. It will then become possible to formulate recommendations regarding the accuracy and clarity of the terminology, which will in return increase the coherence and precision of scientific literature that addresses CR and the thoughts that it aims to treat.

2. Method

2.1. Data sources and searches

Clinical studies that included a cognitive component for treatment of gambling problems were targeted for the literature search. It focused on studies published between January1980, i.e. the official publication date of the 3rd edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III, American Psychiatric Association [APA], 1980) in which pathological gambling appears as a diagnosis, and December 2013. Data sources were collected via PsycNET, PubMed and FRANCIS.

Two search strategies were applied for the data collection by using keywords that encompassed the following themes: gambling and treatment. The first strategy involved searching keywords in the abstract from the three search engines with the following combination of terms:

(gambling OR gambler*) AND (treatment* OR intervention* OR therapy OR therapies).

The second strategy consisted in using the search engines' thesaurus. Since FRANCIS did not allow for the use of this strategy, it was applied with PsycNET and PubMed only. The indexed terms in the PsycNET thesaurus were:

{gambling} AND {psychotherapy} OR {cognitive behavior therapy} OR {cognitive restructuring} OR {cognitive therapy} OR {cognitive techniques}.

In PubMed, the following combination was used:

("gambling"[Mesh]) AND ("cognitive therapy"[Mesh]).

To collect the grey literature, a search on Google and Google Scholar allowed for the completion of the review by listing papers and research reports that were unavailable in the scientific search engines. Research centers and Canadian treatment centers specialized in addictions were identified by two research assistants, and emails were sent to obtain unpublished research reports. Relevant articles were also identified in the reference list of the articles collected for this study.

2.2. Inclusion criteria

The inclusion criteria are: (a) to be written in English or French; (b) to be published from 1980 to December 2013; (c) to have empirically evaluated a treatment comprising a CR component; (d) to treat gambling as the main problem. No exclusions were made for the experimentation protocol (experimental, quasi-experimental, case study).

2.3. Study selection

To manage the studies, EndNote X7.1 software was used. As for the literature search, 4667 articles were found with the three search engines and 21 were found with other sources. Among the 4667 studies, 1747 were identified as duplicates and 313 as irrelevant documents (tests, audiovisuals materials etc.). At the first selection phase (screening), titles and abstracts for the 2607 remaining studies were read and 2382 studies were excluded. To assure the integrity of the study selection procedure, an inter-rater agreement procedure was calculated on 10% of the studies ($n = 261$) between the first author and a research assistant (inter-rater agreement = 97.7%). For disagreements, a consensus was obtained.

After this selection, 225 studies were retained for the second selection, which consisted in reading the whole PDF document. Since the latter were not available for 18 studies, emails were sent to the 11 authors for whom email addresses were available. Three authors replied with a copy of their manuscript.

Thus, 210 studies were read to verify if they satisfied the inclusion criteria. This phase also included an inter-rater agreement procedure, for which the final agreement was of 100%. Thirty-nine studies including one or more sessions of cognitive restructuring were retained and analyzed. Fig. 1 illustrates the flow diagram of the selection procedure.

2.4. Quality assessment

Two instruments that evaluate the risk for bias were used in