Original article

Outcome expectancy considering the use of alcohol, cannabis and tobacco

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INTRODUCTION

Drug effect expectancies are essential for the development of drug abuse and dependence, hence the importance of in-depth studies that comprehend different psychoactive substances. Brown[1] has analyzed the involvement of each expectancy in the process of changing a dependent behavior, in an approach based on the following questions: 1. What is the drug effect expectancy? 2. How do expectancies relate to the development of addictive behavior? 3. How to incorporate expectancies about drug effects, considering both intervention and prevention?

Cognitive or informational behavior is associated with what one "knows" or "expects" to happen, as a result of a given behavior. On the other hand, motivational or encouraging behavior comprehends the desire and reinforcement value of the expected result or effect. Positive outcome expectancies may originate from the exposure to conditioning stimuli, associated with previous expectancies about the drug, physical dependence, personal and cultural beliefs about the drug effects and situational/environmental factors.[2]

Such expectancies about the use of psychoactive substances are important for the treatment and prognosis of chemically dependent patients, being useful to study and relate them to different drugs, samples and populations. Therefore, this paper aims at presenting a theoretical review about the "outcome expectancy" construct considering the use of alcohol, cannabis and tobacco.

METHOD

We performed searches in the following electronic databases: MEDLINE, PsycINFO, ProQuest, Ovid, LILACS and Cork, using the following descriptors: *belief, expectancy, expectation, drug*, and *effect*.

Inclusion criteria

- Indexed articles, published from 1991 to 2005;

- Non-indexed articles, books, master's theses and doctoral dissertations, as well as classical articles about the theme, regardless of publication date.

Exclusion criteria

Articles that are not specifically about outcome expectancy considering the use of psychoactive substances.

RESULTS

Outcome expectancy and dependent behavior

Marlatt & Gordon[2] define outcome expectancy as cognitive, cultural and personal beliefs about the effects of a given drug that lead the individual to engage in dependent behavior. Bandura[3] has distinguished between two types of expectancy related to any form of behavior: efficacy expectancies, which involve the ability to perform the behavior, and outcome expectancies, which are related to what is expected as an outcome of such behavior. Both types of expectancies are important to understand the recurrence process, since they may influence the performance of a confrontation response: resisting a risk situation is more likely when outcomes resulting from such resistance are related to long-term benefits.

With regard to drug use, outcome expectancies are expressed in different response systems: physical effects (changes in sensations and feelings associated with the physiological effects of the drug); psychological effects (cognition and altered emotional states); and behavioral effects (changes in acts and manifest behavior).[4]

Marlatt & Rohsenow[5] argue that few studies assess the individual's preconceived expectancies about alcohol and other drugs. Further studies about cessation of substance

consumption may assess attitudes before the beginning of this process, separating 1) expectancies about effects and abstinence, and 2) symptoms themselves.[6]

Outcome expectancy and use of alcohol

Darkes et al.[7] assessed the concept of expectancy based on the studies by Bolles[8] and Tolman,[9] and reported that the empirical studies show a strong relationship between positive expectancies to alcohol effects, which were measured using psychometric instruments, and expectancies analyzed in self-reports by individuals who use this substance. These authors also state that positive expectancies to the use of alcohol are predictive factors for the use of this substance among adolescents and young adults, as well as for the reduction of consumption levels in such individuals. Participants in the study by Darkes et al.[10] had mean age of 18.38 years, and 42% reported family history of alcoholism related to their biological father or mother. They also confirmed using alcohol with frequency ranging from "rarely" to "18 times or more a week," which was measured through ingested and reported doses. The findings suggest that positive expectancies may serve as a path to carry the effect of major predicting variables in order to determine alcohol consumption. In this process, some possible antecedents, such as family history of alcoholism and family environment, were eliminated because they did not present a significant correlation with the variable alcohol consumption. Thus, positive outcome expectancies can be understood, in order to assess a wide range of risks and factors that avoid or anticipate onset of alcohol consumption, which may lead to a dependent behavior.

Aarons et al.[11] compared outcome expectancies about alcohol and the amount and form of its consumption. They developed alcohol expectancy models using a cognitive paradigm in which expectancies are projected. The research was carried out at a major public university in the American Southeast. A total of 927 college students, male and female, aged between 17-35 years, participated in the study. Positive expectancies to alcohol use were associated with heavy consumption of this substance in a high number of individuals, children of "problem-drinking"

parents, which might reveal the importance of family exposure to establish this type of belief in severe alcoholics.

Alcohol-related positive expectancies may be assessed using the Alcohol Expectancy Questionnaire, as well as other scales that assess this factor.[12] In addition, alcohol-related expectancies vary according to the complexity of risk factors, and should be interpreted using the multifactorial model.[13]

According to Leigh & Stacy,[14] it is likely that the relationship of outcome expectancy to drinking will differ with age. These authors examined the prediction of drinking behavior from positive and negative outcome expectancy at different ages. Data were collected from 2,875 subjects, male and female, aged 12 and older. They surveyed drinking habits, including questions about frequency, minimum and maximum quantity, beliefs about the effects of alcohol and alcohol expectancies. The relationship between positive and negative expectancy and the drinking behavior was tested for different age groups. Outcome expectancy accounted for a larger portion of the variance in drinking among younger respondents than among older respondents. When suppression effects were considered, positive expectancy predicted drinking among respondents under 35 years, whereas negative expectancy was a better predictor of drinking status in most respondents over 35 years. Among drinkers, positive expectancy related to suppression effects predominated over negative expectancy, without a separation by age groups. These results suggest that negative expectancy predicts abstinence, while positive expectancy predicts level of drinking among drinkers.

In recent years, outcome expectancy has emerged as a key concept in psychosocial models of alcohol use. The opinion about the effects of alcohol on behavior, modes and emotions correlated with drinking in adolescents and adults has grown stronger.[15] Consistency of such relationship in all surveys carried out shows that these expectancies play a role in starting and maintaining an alcohol addictive behavior.[12,16-18] Decision about drinking is partly influenced by the expectancy that alcohol will result in certain desirable consequences, such as reduction of tension, social and sexual

facilitation. The drinking behavior is then maintained by these positive expectancies about alcohol effect, which, as the drinking experience, are accumulated through time. Therefore, it is likely that positive expectancies to alcohol use will differ with age.[14]

Oliveira & Werlang[19] developed the Brazilian version of the Inventory of Alcohol Expectancies and Personal Beliefs (IECPA). They studied a sample of 502 subjects, male and female, from the community, outpatient clinics and hospitals, aged between 16-74 years. The authors applied the IECPA and observed that the heavier the drinking pattern, the higher the expectancies about the use of alcohol, according to the scores in the following four groups: "does not, or rarely, drink," "does not drink more than 80 g of alcohol," "systematically drinks more than 80 g of absolute alcohol," "systematically drinks more than 80 g of alcohol and has been submitted to or is undergoing treatment."

The most used instrument to measure adolescent and adult expectancies is the Alcohol Expectancy Questionnaire (AEQ), which has separate versions for adolescents and adults. The adult version of the AEQ only measures positive expectancies; on the other hand, the adolescent version includes items that measure negative effects.[14]

There is more than one theory trying to explain the drinking behavior. According to Oei & Morawska,[20] the theory of alcohol positive expectancy spawns from the theory of social learning, which presumes that cognitive activities, such as anticipation, expectancy and memory about the history of alcohol use, shape and may determine the dependent behavior.[21] Another theory presupposes that behaviors and expectancies by young alcohol dependents are mainly determined by social influences of culture, family, and partners. It should be stressed that even the predisposition of individual factors will suffer the influence of such social agents. The concept of alcohol expectancies originates from studies that indicate that alcohol effects are not associated only with physiological factors, but to cognitive factors, as a consequence of beliefs and opinions about the effects of this substance. For example, individuals who are given a placebo believe that they drank alcohol and behave according to their expectancies about its effect.[5]

The AEQ assesses the opinion about the effects of alcohol on several aspects of behavior and cognition.[15] Although Bandura[3] proposed the distinction between outcome expectancy and self-efficacy expectancy more than two decades ago, most researches have focused only on outcome expectancies, which indicates these are the most important predictors of alcohol consumption.[20,22,23]

The effect of expectancies on drinking behavior is based on the information about alcohol and its effects, acquired during childhood and adolescence and stored in the long-term memory, in the shape of a semantic network.[10] Once these expectancies are established, they guide the behavior when exposed to alcohol, so that an individual may produce the predicted effects when alcohol is used. Thus, the individual's opinion about the power of alcohol may change more the behavior associated with the use of this substance than physiological actions themselves.[12] The automatic processing of consequences of alcohol use determines the choice for using the drug, as well as the behaviors subsequent to this consumption. As a consequence, when alcohol is used, expectancies are confirmed. The environmental contingencies and the real physiological effects of drinking reinforce outcome expectancies about alcohol effects, which makes the maintenance of drinking dependent on these expectancies, which are being confirmed or not.[20,23]

Positive expectancies are generally better predictors of alcohol consumption for adolescents than for adults. This might reflect the meaning of expectancies to behavior, which vary according to age.[12]

Expectancies about social and physical pleasures have been associated with individuals who used to drink socially. They have reported the expectancy that alcohol would reduce tension.[1] Women generally present positive outcome expectancy, in a more global manner, whereas men focus on sexual facilitation. However, both genders seem to strongly endorse social expectancies.[20]

Outcome expectancy and use of cannabis

Schafer & Brown[24] have applied the Marijuana Expectancy Effect Questionnaire (MEEQ) to 704 students from two universities in the south of California. Around 62% of the sample was

composed of women, and mean age was 19.23 years (SD = 3.42), range 17-54 years. As to the use of substances, 295 students (42%) reported using cannabis, seven times a month in average (SD = 8.16). The MEEQ was applied for the whole group, along with a record containing sociodemographic data and the usual consumption of the drug. In this MEEQ validation, the psychometric properties found were satisfactory, indicating that the instrument was appropriate for assessing beliefs about the use of cannabis.

Aarons et al.[25] have assessed the psychometric properties of the MEEQ, in a longitudinal study, by using a clinical and non-clinical sample of adolescents. They confirmed the MEEQ as a reliable scale for adolescents (15-19 years). Internal consistency was good and similar to the findings by Schafer & Brown,[26] when they validated the MEEQ with a sample of adults. The test/retest reliability coefficient, after 2 years, was moderate, revealing the notion that expectancies are usually stable, and may fluctuate according to changes in social context and learning about the social and pharmacological effects of the drug.

Adolescents with higher expectancies for cognitive/behavioral impairment and negative global effects presented lower probability of using cannabis, after 2 years of study. This suggests that such expectancies may prevent adolescents from using cannabis.[26]

In general, higher scores in negative expectancy scales and higher expectancies for cognitive/behavioral impairment and negative global effects were associated with cessation of cannabis use, whereas lower negative expectancies and lower expectancies for cognitive/behavioral impairment and negative effects were associated with continuous use of this substance.

Findings by Aarons et al.[21] correlate low expectancies for cognitive/behavioral impairment and other negative effects with a higher probability of getting involved with the substance. However, these data may suggest the search for a strategic potential for the prevention of the development and sequential progress of cannabis use, as negative expectancies about the use of substances start being developed and reinforced, to the detriment of positive expectancies.

Galen & Henderson[27] validated the MEEQ[24] in a study with a clinical population, whose sample consisted of 149 males, aged between 23-59 years, hospitalized for treatment at an inpatient substance abuse unit (21-28 days). Nonusers of cannabis presented higher negative expectancies than users. With regard to expectancies for greater relaxation and craving effects, users presented higher scores than nonusers or those who quit using cannabis. Findings also suggest a change in the theory that presents negative expectancies as factors able to avoid the onset of drug use in nonusers, since this study showed that users present lower negative global expectancies when compared to nonusers.

Researches have shown that domains of expectancies related to the use of cannabis are similar to those related to alcohol.[28] These authors modeled a semantic network of cannabis expectancies stored in memory, by using a methodology based on the study of alcohol expectancies. They mapped expectancies into memory network format and preference, aiming to model likely paths of expectancy activation. The instrument used to assess expectancies considering the use of cannabis, the Memory Model-Based Marijuana Expectancy Questionnaire (MMBMEQ), was created by the authors and applied to two groups. Group 1 consisted of 172 subjects, 105 women and 67 men, aged between 17-47 years (mean of 20.97 years), volunteers, psychology students, whose consumption of cannabis varied from "no use" to "daily use." There were 54 impersonal items, which participants could answer even if they had never tried the drug before. Group 2 consisted of 754 volunteers, 539 women and 215 men, aged between 17-50 years (mean of 20.99 years), whose consumption of cannabis should have occurred at least once in their lives, since the participants answered according to their experience after smoking cannabis. Guarantee of secrecy, anonymity and the ethical principles of the research facilitated the responses given by this group. Organization and activation of cannabis expectancies were found to vary with consumption level. Heavy cannabis consumers presented expectancies for relaxing and being less agitated, and were most likely to activate positive expectancies of relaxation, cognitive enhancement, and social facilitation. Nonconsumers, however, emphasized a detached-aware dimension and were more

likely to activate negative expectancies of cognitive performance and social facilitation. According to these authors, further efforts, using such standard tests of likely activation patterns of outcome expectancy, may be successful in assessing change in behavior regarding the use or onset of cannabis use.

A brief version of the 70 items in the MEEQ was developed to be used among hospitalized adolescents. A single item was created to represent each of the six subscales of the original instrument. About 124 adolescents answered the brief version of the instrument (MEEQ-B). Psychometric analyses suggested that the MEEQ-B had two factors: one with 29% of response variation, about positive expectancies, and another one with 23% of response variation, for negative expectancies. In addition, internal consistencies of each factor were 61 and 38%, respectively. This study concluded that the researchers must continue to use the longer version of the instrument, but that the brief version may be useful as a clinical instrument, to raise discussions about cannabis expectancies.[29]

Stein et al.[30] assessed the implications of cannabis use among adolescents undergoing treatment. Eight-two adolescents participated in the randomized study. They had high rates of alcohol, cannabis, and tobacco use. Cannabis and tobacco use was associated with high rates of depressive symptoms. With regard to expectancies about the use of such drugs, adolescents generally did not expect alcohol to have a great impact on their lives, except concerning increase in courage, and the adolescents felt confident about their ability to resist alcohol. Nevertheless, the adolescents expected cannabis to have a greater positive impact and a very small negative impact on their lives. They were not confident about their abilities to resist cannabis, although many showed interest in making changes with this respect.

Pedroso et al.[31] validated the Marijuana Expectancy Questionnaire (MEQ) – Brazilian Adaptation. The convenience sample consisted of 400 subjects, men (n = 217) and women (n = 183), aged between 12-60 years (mean = 25.41; SD = 9.42), cannabis users (n = 147) and nonusers (n = 253). Among the users, 90 were dependent on cannabis; of these, 56 were hospitalized. For the

semantic validation, the researchers used a committee of experts and brainstorming. The study presented $\alpha = 0.89$ for the 78-item scale, and $\alpha = 0.89$ for the reduced 55-item scale. In this Brazilian sample, all 78 items were applied, but the statistical analysis was based on the reduced scale, since the psychometric properties were similar. Discriminant validity for the reduced scale was statistically significant ($p = 0.001$). Temporal stability was examined in a sample of 123 subjects, with a 1-week interval between test and retest, indicating a consistent response standard through time ($r = 0.990$). The MEQ – Brazilian Adaptation presented good psychometric results and was able to assess outcome expectancy related to cannabis use.

Outcome expectancy and use of tobacco

Gilbert & Warburton,[6] in a survey with smokers, found results that suggest that negative beliefs about tobacco use have an association with abstinence, whereas beliefs in pleasant effects are related to the consumption of this substance. The classical theory of substance removal implies that the negative effects of abstinence are universal and inevitable due to the pharmacological effect of nicotine withdrawal. These effects will interfere in expectancies related to tobacco use and, consequently, in the consumption of this drug. The researchers concluded that cognitive therapy techniques may encourage patients to change their expectancies by focusing on positive outcome of cessation, in order to make permanent changes in their lifestyle.

DISCUSSION

Despite the limitations in terms of studies that associate outcome expectancies and addictive behavior, results found in the reviewed literature show that the domains of outcome expectancy about the use of several psychoactive substances are similar.[28] Nevertheless, this study showed that it is important to develop and validate instruments to specifically measure outcome expectancies related to the use of different psychoactive substances, since there is evidence that subjective and behavioral effects of drugs are influenced by expectancies.[31]

Beliefs have been studied as indicators of people's feelings about their expectancies and how much this is connected to effects caused by drug use. It is necessary to know how beliefs are acquired and maintained, in order to understand how they can be changed.[32]

Outcome expectancy may be understood as cognitive representations of direct and vicarious learning that create a memory network, which can be activated by drug-related factors. Outcome expectancies are activated and trigger the voluntary addictive behavior, in which subjects decide to use the substance when their psychological reactions anticipate the compensation for using the drug.[4]

After reviewing the literature, expectancies were seen to serve as a path to carry the effect of major predicting variables in order to determine alcohol consumption.[7] Positive expectancies about alcohol use are associated with heavy consumption of this substance among individuals with "problem-drinking" parents, which reveals the importance of family exposure in severe alcoholics. Empirical researches show that expectancies play a role in the onset and maintenance of an alcohol-dependent behavior.[11,15,18]

This study shows that expectancies about alcohol can maintain drinking behavior, as an attempt to achieve desired outcomes. Since expectancies about alcohol effects, as well as the drinking experience, are accumulated through time, it is likely that outcome expectancies to alcohol use will differ with age.[12,16-18]

With regard to individuals who drink socially, outcome expectancies to alcohol use are associated with social and physical pleasure, and the desired effect is related to tension reduction.[1] As to gender and its relationship with expectancies to alcohol use, men and women endorse social expectancies, but women present more positive outcome expectancies in a global functioning sense, whereas men focus on social and sexual facilitation.[20]

With regard to tobacco use, expectancies are associated with the pleasure of smoking. There are variations between individuals, but with similarities in this process. Individuals with more negative experiences are likely to attribute them to nicotine abstinence. Emphasis on positive

outcomes of abstinence may be treated using cognitive therapy, with the aim of changing expectancies, focusing on positive outcomes of cessation.[6]

Researches about the construction and role of outcome expectancies for the development of substance abuse are thought to increment cognitive and behavioral strategies that aid changing such beliefs and their meanings, thus facilitating change in dependent behavior. However, the articles found in surveyed databases did not focus on applicability of expectancies in the prevention and change of addictive behavior. Further studies are needed to complement current findings. Validation of instruments to measure outcome expectancies related to the use of psychoactive substances is only the beginning of a process that may help preventing the development and sequential progress of the use of psychoactive substances. These strategies should include education about negative effects associated with drug use, as well as reinforce negative expectancies associated with them.

CONCLUSIONS

Studying about the outcome expectancy construct related to the use of psychoactive substances revealed the need of further researches approaching this theme, using different samples and types of drugs. Alcohol related to outcome expectancies is the most studied theme. Since it is a theme that still needs more attention in researches, our search for specific articles in the databases only showed three articles about outcome expectancies related to cannabis use and two articles related to tobacco use; no articles about the use of other psychoactive substances were found.

Data from the literature showed that outcome expectancies are determined by what people believe about the effects of a given drug. The effects of psychoactive substances as shown in the media make these people interact with such information, watching and learning behaviors based on beliefs in positive or negative outcomes.

Real effects of drug use do not always correspond to desired effects. Therefore, individual expectancies are the product between the real effect and the desired effect with regard to the

consumption of each substance. Thus, in a recurrence process, positive outcome expectancies may be more relevant than impairments resulting from drug use.

The concept of outcome expectancies related to cannabis use is similar to the concepts found in relation to other drugs, such as alcohol and tobacco, although researches show the importance of studying the specific peculiarities of each drug.

There is still the need of characterizing the outcome expectancy construct considering use of psychoactive substances, diversifying samples and using specific subjects: adolescents, adults, men, and women.

In this study, we included articles indexed in the databases available on the Internet, which contained the descriptors mentioned in the methodology. However, no contact was made with the respective authors, in order to know whether there were other non-indexed articles about the outcome expectancy construct. It is believed that, at another occasion, a systematic review can be carried out. This methodological process could bring an in-depth understanding of the theme under investigation.

Nevertheless, clinical practice and the articles reviewed for this research show that outcome expectancies influence onset and maintenance of dependent behavior. However, the practical and ethical value of knowing about the outcome expectancy construct related to the use of psychoactive substances still has a long path ahead considering prophylactic measures needed to the growing drug use, as well as to the treatment of chemical dependency.

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ABSTRACT

This article aims to perform a theoretical review about the outcome expectancy construct considering the use of alcohol, cannabis and tobacco. Outcome expectancy is determined by people's belief about the effects of a drug. It is an important variable for the treatment of

chemically dependent patients. Searches in the electronic databases MEDLINE, PsycINFO, ProQuest, Ovid, LILACS and Cork were carried out, using the following descriptors: belief, expectancy, expectation, drugs, psychoactive, and effect. Results showed that outcome expectancy considering the use of those substances can be generated from: exposure to conditioning stimuli, physical dependence, personal and cultural beliefs, and situational and environmental factors. In conclusion, there is the need of new researches on expectancies related to psychoactive substances and age groups in order to have a better understanding of this construct.

Key words: *Outcome expectancy, alcohol, cannabis, tobacco.*

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