The European Journal of Counselling Psychology
ejcop.psychopen.eu | 2195-7614

Social Learning Conceptualization for Substance Abuse: Implications for Therapeutic Interventions

Theodoros Giovazolias*[a], Olga Themeli[a]

[a] Department of Psychology, University of Crete, Rethymno, Greece.

Abstract

Substance misuse and abuse among adolescents and young adults, especially students, remain a significant public health issue, often associated with serious academic, psychological and health problems. Theoretical models of social behaviour emphasize the importance of peer behaviour as a modelling or normative influence. The processes by which social influence factors contribute to substance misuse behaviour have been described in models derived from the social learning paradigm, including both socio-environmental (e.g. social modelling, perceived norms) and coping skills and cognitive variables (e.g. self-efficacy, outcome expectancies). However, this growing body of the literature often reveals contradictory findings regarding the precise mechanisms of processes by which social and cognitive variables may influence substance misuse in youth populations. This review critically examines the literature on different forms of peer influence and accordingly provides suggestions for intervention strategies that take into consideration the relevant research findings on social learning constructs.

Keywords: social learning, norms, self-efficacy, youth, substance abuse, counselling interventions

The European Journal of Counselling Psychology, 2014, Vol. 3(1), 69–88, doi:10.5964/ejcop.v3i1.23

Received: 2013-07-04. Accepted: 2013-12-22. Published (VoR): 2014-03-28.

*Corresponding author at: Department of Psychology, School of Social Sciences, University of Crete, Gallos Campus, Rethymnon, Crete, 74100, Greece. E-mail: giovazot@uoc.gr

Introduction

Research on an international level suggest that the use of illegal substances is considerably common among young people. On a large scale research among 16,661 participants aged 18 and over, Richter, Ahluwalia, Mosier, Nazir, and Ahluwalia (2002), found that 9% had made use of an illegal substance within the last month of the review, whilst in the review of Webb, Ashton, Kelly, and Kamali (1996), the use of any prohibited substance was reported by 59% of participants.

Particularly, as far as the epidemiology of alcohol misuse among young people is concerned, Dawson, Grant, Stinson, and Chou (2004), noted that 42,6% of students aged 18 to 29 have been involved in a heavy drinking episode at least once at some point within the last year, 2,7% consume alcohol more than once a month and 12,7% once a week. According to the latest report of the World Health Organization, the EU is the heaviest drinking region of the world, with over one fifth of the European population aged 15 years and over reporting heavy episodic drinking (defined as five or more drinks on one occasion, or 50g alcohol) at least once a week (WHO, 2009). It has been pointed out that marijuana is most commonly used, compared to other substances. This is also confirmed by researches in Greece (Madianos, Madianou, & Stefanis, 1995).

In a research on 14.000 students, the frequency of marijuana use during the last 30 days rose from 12,9% to 15,7% between the years 1993 and 1999, which constitutes an increase of 22% (Gledhill-Hoyt, Lee, Strote, & Wechsler, 2000). Similarly, a research that took place in 119 universities showed that cannabis use increased from 13% in 1993 to 23% in 2001. Furthermore, other research reports have demonstrated that an increase is also observed in the levels of other illegal substances use (cocaine, crack etc.) the last 30 days as well as the last year (since the research commencement), given that from 4% in 1993, they rose to 7% in 2001 and from 11% to 14% respectively (Mohler-Kuo, Lee, & Wechsler, 2003)

Illegal substances use in Greece is less frequent compared to the countries of the rest of Europe as well as the countries of the U.S., with a prevalence of 6% in the duration of an individual's life, yet half of the prohibited substances users mention that their use takes place more than once (Kokkevi & Stefanis, 1991). Furthermore, in a more recent review, it was noted that the prevalence of use during the last year as well as the last month (since the research commencement) was also increased from 1% to 4% and from 0,3% to 2,1% respectively. Taken together, these facts demonstrate an increase of prevalence not only among those who occasionally use prohibited substances but also among those who are involved in a more systematic use (Kokkevi, Loukadakis, Plagianakou, Politikou, & Stefanis, 2000).

It has also been observed that young adults aged 18-24 of both sexes, constitute a high risk group since they are more relaxed with regards to issues concerning alcohol consumption and they demonstrate, in comparison to other age groups, the highest levels of excessive use as well as reported episodes due to alcohol use (Kokkevi et al., 2000).

It has been noted that the age period between 18-25 constitutes a special phase, pertaining to certain characteristics that often render an individual vulnerable to getting involved with substances (Arnett, 2005). Indeed, during this period of life, an individual explores his/her identity and experiments with new behaviours, and for some this may include substance use. In addition, the process of establishing one’s identity is often a confusing and difficult process, and some individuals may resort to drugs as a way of relieving this confusion. Individuals who have just entered adulthood, are extremely focused on themselves, feel free to make decisions independently and without needing to ensure that permission or consent is granted from others. In that sense, it has been argued that self-focus combined with absence of social control, which is well-suited with this age, may lead to substance use (Arnett, 2005). Furthermore, during this period, individuals feel neither as teenagers nor as adults, but somehow in-between. On one hand, since they are no longer teenagers, they feel capable of deciding for themselves whether they would make substance use or not. On the other hand, because they do not consider themselves as adults, they do not feel bound by the social rules of adult behaviour and thus assume that they have the fundamental liberty to engage in activities, in which they would not be able to do as soon as they reach adulthood (among which is substance use).

Consequently, substance use among young adults is increased. It has been noted, though, that despite the fact that individuals who have just finished school exhibit an increased level of substance use, university students display higher levels compared to individuals of the same age that do not attend university (Dawson, Grant, Stinson, & Chou, 2004; O’Malley & Johnston, 2002). Gledhill-Hoyt et al. (2000), observed that the years of university constitute a period of experimentation (especially with marijuana) and at the same time, it is a period when many become regular users. This is supported by the findings of their research, according to which, 29% of the users

had begun cannabis use and 34% continued regular use after the age of 18, when most of the participants have entered university.

According to Reed, Wang, Shillington, Clapp, and Lange (2007), peer influences, the university environment – which involves little or no adult supervision – as well as psychological factors, such as isolation or group identification, may play a significant role in use initiation during this period of life. For example, it has been demonstrated that, in contrast to non-users, the users of ecstasy are more likely to spend more of their time in socializing and participating in clubs and associations, indicating that use by students takes place within a social setting, where the impact of peer pressure is higher (Strote, Lee, & Wechsler, 2002).

An important issue worth noting is the relation between the use of one substance and the use of others that has been confirmed by many reviews. It has been shown, for example, that the majority of adolescents who smoke, also consume alcohol. Further, smokers who drink, consume larger quantities of alcohol from the non-smokers who drink (Duhig, Cavallo, McKee, George, & Krishnan-Sarin, 2005). On the other hand, it has been shown that smokers smoke more often while consuming alcohol (Reed, Wang, Shillington, Clapp, & Lange, 2007). Positive interactions have also been found among the use of cannabis, tobacco and alcohol and among the use of cannabis and other illegal substances including LSD, amphetamines and ecstasy (Aitken, DeSantis, Harford, & Caces, 2000; Webb, Ashton, Kelly, & Kamali, 1996). According to another study (Schorling, Gutgesell, Klas, Smith, & Keller, 1994), 95% of individuals who made use of cocaine or LSD during the last year of the research, had also made use of marijuana. In addition to that, 85% of marijuana users either smoke or have been involved recently in a drinking episode, while 100% of cocaine or LSD users have also tried tobacco, alcohol or marijuana. It has also been reported that ecstasy users are more likely to use marijuana and vice versa (Strote, Lee, & Wechsler, 2002). Another recent review concluded that there is a significant relationship between the use of legal and illegal substances, since 9 out of 10 of marijuana and other users of prohibited substances participating in their research, also smoked or consumed large quantities of alcohol (Passos, Brasil, Santos, & Aquino, 2006).

Due to the facts mentioned above, in this review we will be referring to substances interchangeably and will not focus solely on a single one of them.

Further, in order to illustrate more clearly both the theoretical underpinnings as well as the intervention concepts discussed in this paper, a case study will now be presented.

Case studies have played a crucial role in the evolution of counselling psychology research methods (Edwards, 1998). It has been suggested that in case study research, the advantage of working with a single participant is that resources are more likely to be available to obtain information from a variety of sources. For example, a single case study might include data in the form of measures, observations of behaviour, psychometric test results, statements of other observers (such as family members), and interview material (Bromley, 1986).

The participant of this case study, a 17-year-old Greek adolescent (Tom) was referred to the first author (a BPS Chartered Counselling Psychologist) by his mother for counselling. In order to ensure rigour in the analysis of the case study, the first author sought out peer supervision by the second author (a forensic psychologist with an extended experience in adolescent deliquent behaviour) who provided very useful insight. Throughout the process, both authors made every effort to remain reflective in the analysis of the material under examination (i.e. session notes, transcripts of sessions) and in linking the material derived with the relevant literature. Reflexivity is considered as one the basic elements of ‘critical’ qualitative research (Fontana, 2004) and relates to the degree of influence

that the researcher exerts, either intentionally or unintentionally, on the findings. Similarly, Parahoo (2006) defined reflexivity as the continuous process of reflection by the researcher on his or her values, beliefs, bias and behaviour and those of the participants, which can affect the interpretation of responses. More specifically, in this study the authors were aware of the potential biases that can occur during such a study. To eliminate this possibility, we found it useful to keep research diaries to raise awareness of influences on our interpretation of the data and our relationship to the research topic. Previous studies have underlined the usefulness of diary keeping during the case study research methodologies (e.g. Jootun, McGhee, & Marland, 2009). It should also be noted that any aspects that could lead to the identification of the participant have been changed. Further, written consent from Tom and his mother was obtained in order to use material from the therapeutic sessions for research purposes.

Case Study Strategy

This case study is about Tom, a 17-year-old Greek adolescent. His assessment at the initial intake session in a public mental health community centre indicated that he met the criteria for substance dependence, conduct disorder, and depression. Tom was referred by his mother and was especially reluctant in the procedure, claiming that he is facing no problems in his life.

Tom's parents were divorced when he was 2 years old. As a child, Tom would spend a very limited time with his parents because his mother was preoccupied with her own business, and his father was busy starting a new family. Tom moved from a big city to a small town with his older brother 5 years older) and mother when he was 9 years old. Shortly after this move, his mother reportedly experienced a "nervous breakdown" and was hospitalized for 3 weeks, and had regular sessions with a psychiatrist for another 2 months. Throughout his mother's hospitalization, Tom stayed with his aunt, however he would have no contact with his parents. During this time, Tom became uncooperative at home and school for the first time. He would engage in a lot of fights with other children and have frequent outbursts at home. His aunt was merciful with Tom because she felt sorry for him. About a year after his mother was discharged from the psychiatric hospital, Tom moved back to the big city with his mother and brother. Tom experienced serious difficulties adapting to school, receiving detentions for his behaviour and poor grades, and was non-compliant with his mother. His behavioural problems worsened with the passage of time. During his high school years, Tom experienced a number of stressful situations. Indeed, he switched 3 schools, and his mother lost her job. Tom reported that financial concerns caused his mother to be irritable and depressed, and "would be completely indifferent about how I was feel". At that time, Tom started to spend more time with delinquent youth, came home late for dinner, and was frequently absent from school.

Although Tom reported current use of marijuana and alcohol at the time of intake, he did not consider this to be a problem. He denied use of other illicit drugs. Tom reported that his first use of marijuana and alcohol occurred at a friend's party with his brother and some older adolescents during the middle of his first year in high school. As he met more drug-using friends and "contacts," frequency of his drug use progressively increased. Over the last 2 years, Tom reported that he had used marijuana nearly every day, consumed alcohol until intoxication about four times per week and had used hallucinogens pills three times. Tom reported that he never used illicit alone, and he usually used illicit drugs at his home when his mother was at work, during parties, or "mate-gatherings". Most of his friends were drug users and drug dealers at the time of his initial intake session.

Examining the aetiology of Tom's emotional and behavioural difficulties from a social learning perspective, one would firstly point out the – physical and psychological – absence of his parents, as his mother was busy in her

work, and his father “was never close to me”. Thus, generalized reinforces such as praise and attention from his parents for appropriate conduct were limited, if not non-existent. Noncompliance during his mother’s hospitalization was maintained by his aunt’s failure to control Tom’s misconduct with appropriate consequences (e.g., positive practice, removal of privileges). Thus, prior to his mother’s return from her hospitalization, Tom was adapted to obtaining reinforcement for inappropriate behaviour (e.g., when Tom would get into a fight with his brother or have an anger outburst his aunt would take him for a walk in a playground or in the play store because she would feel sorry for him). His mother’s return to the family system brought about sudden inconsistencies in the contingencies of reinforcement that were established, which in turn led Tom to be more confused, depressed, and exhibit misbehaviour.

His mother’s decision to move back to the big city resulted in the loss of Tom’s established reinforces from the small town (loss of his friends, infrequent visits from his father), which led to further upset and depressive emotions. His mother was “responsible” for the removal of these reinforces, and as reported by Tom, this resulted in his resentment for her. His subsequent adjustment to school in the big city was turbulent. New environmental stressors included meeting new friends and teachers, financial restrictions, living in a very small flat, mother’s irritability, and lack of parental supervision (due to his mother having to work long hours). The above-mentioned stressors as well as Tom’s resentment towards his mother resulted to frequent tensions between him and his mother. In addition, his mother’s fatigue from work restricted the times in which she could monitor and consequently reinforce (praise, attention, rewards) Tom’s prosocial behaviour (e.g., homework). Transferring to a new school, modelling and encouragement from his brother to use drugs with older delinquent peers, social acceptance, peer pressure and expectancies for engaging in “exciting” delinquent and drug use behaviour, “good feelings” that occurred consequent to alcohol and drugs, anger at both parents, and lack of consistently enforced consequences all contributed to his delinquent and drug use behaviour.

Cognitive-behavioural intervention was implemented to alter Tom’s dysfunctional behaviour and poor psychological state. For example, he received reinforcement for engaging in behaviours that were associated with abstinence from alcohol and illicit drugs as well as for socially accepted conduct. Further interventions included: 1) enhancement of communication skills in order to improve his interactions with his mother, 2) a point system to establish consistent consequences for Tom’s behaviour, 3) a stimulus control intervention to encourage more time with non-delinquent and non-substance use associations as well as to assist Tom in spending less time with delinquent and substance-using associated stimuli in his environment, 4) training to improve resistance skills and 5) an urge control procedure to assist Tom in reducing his desire to engage in troublesome activity or drug use. Most interventions were implemented successively and cumulatively. That is, these interventions were initiated during all sessions, with time spent reviewing each intervention fading as time progressed. Interventions also became less structured (i.e., less role-play interactions, less therapy assignments) as Tom’s skills gradually improved.

Tom progressively improved in all areas throughout intervention. He demonstrated abstinence from illicit drugs during the last 2 months of intervention (total length of intervention: 1 year). The number of days he used alcohol decreased only somewhat from baseline levels and he managed to develop a circle of friends who were not involved in drug use. His psychological state, according to his responses to the General Health Questionnaire (GHQ-12) as well as to his own account, seemed to improve to a significant level. Regarding satisfaction in the relationship, both Tom and his mother appeared to be content with one another, as indicated by the time they spent together and the common activities they would undertake.

The case study just presented, will be discussed in the light of a social learning conceptualization for substance abuse.

Social Cognitive Theory, Theory of Reasoned Action and Theory of Planned Behaviour

Social cognitive theory constitutes the most contemporary version of social learning theory. Both theories were formulated by Albert Bandura (1977, 1986) who sensed that, while the theory of social learning is more effective compared to previous theories of human behaviour analysis and provides more efficient methods of behavioural modification, it was confined only to studying environmental influences, ignoring the fact that individuals may also influence their environment. Thus, the notion of cognitive processing was also included in social cognitive theory (Kaplan, Sallis, & Patterson, 1993). According to this, the individual, his/her environment and behaviour interact at the same time, affecting all aspects of their reality. Behaviour is not only the result of the reaction to environmental stimuli but individuals are viewed as capable of thinking and forming an opinion in any circumstance, reflecting on the possible consequences of certain behaviours and then deciding on the best action (McMurran, 1997).

Two basic elements are included in social cognitive theory, denoting the cognitive processes that influence a person's behaviour: *self-efficacy* and *outcome expectancies.* The first is related to a person's belief that they can maintain control over the facts that influence their life and it comprises a general cognitive mechanism which intervenes in the person's behavioural response to the received stimuli (Marks, Murray, Evans, & Willig, 2000). It refers to the evaluation made by the individual in relation to his/her ability to perform an action in a certain situation.

Outcome expectancies refer to a person's beliefs as to whether their involvement in certain behaviours will result in the desired outcomes or not. Outcome expectancies are formed either through the person's immediate experience of a certain behaviour, or through observation (which constitutes the main principle of social cognitive theory) of other people's experiences regarding the outcomes of this behaviour. These people may be members of the family, friends and/or famous people, who represent dominant models for the individual (Sarafino, 2006). It is possible that someone may find out, for example, that consuming alcohol leads to relaxation by observing the positive effects that occur when their parents consume alcohol after a strenuous day at work.

The theory of social cognitive learning is applied in the field of substance use, claiming that people presume positive expectancies and attitudes towards substances through the process of observing or imitating positive statements or attitudes of their models.

Cognitive emotional theories, which include theories of reasoned action and planned behaviour (originating from the socio-cognitive theory paradigm) claim that the primal (primary) reasons of use are found within people's attitudes regarding the effects of substances, as well as their personality characteristics, in addition to the peer pressure for substance use. The theory of social learning, is therefore similar to cognitive emotional theories regarding the hypothesis that attitudes towards substances, as well as the expectancies about possible outcomes are critical factors as far as use is concerned. The theory of social learning, of course, provides additional understanding to the causes of those cognitive factors that determine substance use (Petraitis, Flay, & Miller, 1995). Due to the fact that both share many similarities, the two theories will be viewed parallel to one another.

The theory of reasoned action was formulated by the psychologists Icek Ajzen and Martin Fishbein (1980) in order to describe all human behaviours which are under the voluntary control of an individual, thus constituting a general psychological theory of behaviour, widely applied to the field of mental health. Its basic hypothesis maintains that individuals usually think rationally and make predictable use of the information available to them (Kaplan, Sallis, & Patterson, 1993). The theory of reasoned action as well as the theory of planned behaviour (Ajzen, 1991) – which is actually the former's extended version – were formulated in order to predict social behaviour (Messer & Meldrum, 1995).

The basic concept of both theories comprises the concept of *intentions*, namely the driving factors which affect behaviour. Intentions are indications of the degree of effort which someone plans to make while being involved in a certain behaviour. This means that the higher the intention of an individual to act in a certain way, the greater, presumably, their performance in this behaviour (Ajzen, 1991). Therefore, behaviour is most importantly defined and directly influenced by intentions. As far as substance use is concerned, it has been proven that it is significantly predicted by intention (Elek, Miller-Day, & Hecht, 2006). If an individual intends to perform a certain behaviour, it is most likely that they will bring it to an end. If, however, intention is extinguished, then it is less possible that this act will be carried out. This part of the theories constitutes wide-spread knowledge, but Ajzen and Fishbein moved forward focusing on the factors which affect intentions.

Hence, according to the above, there are three factors that determine the intention of an individual to engage into an action, including substance use: (a) subjective norms, (b) perspectives (outcome expectancies) and (c) the level of perceived behavioural control (self-efficacy), which is found only in the theory of planned action and basically comprises the element that distinguishes it from the primary theory of reasoned action. Other factors, such as personality, age and gender, seem to affect behaviour only through their influence upon the above- mentioned three factors (Messer & Meldrum, 1995).

Types of Norms

According to the theory on norms, a distinction is made among the following types: subjective norms, descriptive norms and injunctive norms. *Subjective norms* reflect internalised moral values and expectancies regarding an action, apart from external rewards or declarations (Kallgren, Reno, & Cialdini, 2000). *Descriptive norms* refer to a person's views regarding the levels of predominance of an action and *injunctive norms* refer to the perceived pressure by the members of the groups that an individual belongs, in order to engage or avoid the engagement into a certain action (Cialdini, Reno, & Kallgren, 1990).

While reviewing the role of the three norms in substance use (nicotine, alcohol and marijuana), it was noted that subjective norms, which are opposed to substance use, have the strongest influence, as they can predict less current substance use, as well as less intent of the individuals to accept substance offer in the future (Elek, Miller-Day, & Hecht, 2006). As far as the other two types are concerned, Rimal and Real (2003) – although they considered injunctive norms with reference to the wider social groups and not only to peers (a fact that could possibly affect the results in a different way) – noticed that descriptive norms have higher input on the shaping of an action, regarding alcohol use, in comparison to injunctive norms.

The theories of reasoned action and planned behaviour focus mainly on injunctive norms, but also provide hints on the impact of descriptive and subjective norms on the formation of an individual's behaviour. The present review is focusing mainly on descriptive norms, taking into consideration that the practical value of their examination is

greater, as most of substance use's prevention and intervention strategies are based on them. *Descriptive norms,* as mentioned above, refer to a person's beliefs as regards to what most people do; while injunctive norms provide information on what should be done, descriptive norms provide information on what is normal and usual.

It has also been suggested that the wider the perceived extent of a behaviour, the higher is the possibility that individuals will consider their engagement in a certain behaviour as normative (Rimal & Real, 2003). If a person believes, for example, that smoking is a regular behaviour in which most people are involved, they are highly likely to continue to smoke after a short period of experimenting, in contrast to those individuals who believe that fewer people smoke (Botvin et al.,1993).

Overestimation of Descriptive Norms

An individual's conception regarding the extent of a certain behaviour may not be so accurate. For example, it has been shown that students are likely to overestimate the amount of peers who engage in substance use. More specifically, it has been noted that the majority of the student population hold false conceptions about the norms of others of the same age as far as alcohol is concerned, tending to overrate the frequency as well as the extent of consumption (Perkins, 2007). In a relevant research, the existence of a deviation between real and perceived norms regarding health behaviours was verified (Martens et al., 2006). In particular, the students who participated in this study had a false perception of the number of peers who engage into alcohol and drug use, tending to significantly overestimate it. Likewise, Kilmer et al. (2006) concluded that students misjudge marijuana use among their peer group. Similar findings were reported from previous research of Perkins, Meilman, Leichliter, Cashin, and Presley (1999), in which the responses of students from 100 different universities regarding their personal use of 11 different substances were compared to their perceptions regarding the frequency of use of these substances by the average student. The findings of this research showed that the participants considerably overestimate the frequency of the average student's use.

With regards to the above, it has been noted that interpersonal communication and conversations on a subject, such as the issue of substance use within the university environment, may be the cause of transmitting false and overestimated perceptions concerning the extent that a certain behaviour occurs (Lapinski & Rimal, 2005). This, in turn, may result in the formation of false estimations of the norm on which individuals are based in order to make decisions regarding their personal substance use (Olds & Thombs, 2001)

The False Consensus Phenomenon

A prejudice which is related to the magnified assumption of individuals about the extent of a prevailing behaviour and may impact on substance use, is the influence of false consensus. This concerns people's predisposition to consider their behaviour as typical and usual and assume that others, under the same circumstances, would behave in the same way.

Indeed, some studies have shown that we tend to overvalue the popularity of our views. Wolfson (2000) studied the phenomenon of false consensus, or else the inclination to overestimate the degree to which others share the same perspectives or behaviours with us, among students who were divided into non-users, users of cannabis alone and users of both cannabis and amphetamines. The results of this study demonstrated the existence of cognitive bias among students, as substance users made significant higher estimations of the levels of general use, especially regarding the particular substance which they used, compared to the non-users. In a similar vein, Martens et al. (2006) found out that individuals who are involved more frequently in a health-related behaviour,

such as alcohol and drug use, are more prone to perceive this behaviour as common among people of the same age. Likewise, Kilmer et al. (2006) found that assessments on marijuana use among students in general were higher among those who used this substance, compared to those who had never used it (77% vs. 29%).

An explanation relating to the phenomenon of false consensus may be the tendency that people have to socialize more with others who hold similar attitudes, values and way of life. This means that their beliefs on the prevalence of a certain behaviour may be a reflection of their personal databases. While according to the theory on norms, the belief that others are also engaged in substance use behaviours may lead to substance use by an individual, the phenomenon of false consensus implies that personal use existed prior to the estimations on levels of prevalence of certain behaviour among other people. However, we are faced with a relationship that is neither simple nor straightforward. In particular, false consensus may produce a fake norm (Pedersen, 1993) through which substance use will continue or increase. Certain substance users may at first overvalue the degree that other individuals undergo substance use due to their selective exposure as well as their need to feel that they are not alone.

Lastly, it has been noted that false consensus may also occur simply because our views outweigh any alternative views since the former are more accessible to our cognitive processing, or because it reinforces the accuracy of our views (Kokkinaki, 2005).

Descriptive Norms and Substance Use

Whatever the reason that young adults often overestimate the degree of their peers' substance use, it is certain that these estimations affect the formation of their behaviour. Iannotti and Bush (1992) concluded that people's subjective estimation regarding the extent of substance use among their friends, including nicotine, marijuana and cocaine comprises a stronger predicting factor of their personal use, in comparison to the actual extent. Similarly, as far as alcohol consumption is concerned, it has been shown that, while higher actual levels among peers are related to higher consumption by a member of the group, the subjective estimation concerning the norm is a more powerful predictive variable (Perkins, 2007). Thus, it is further substantiated that the actual environment of an individual may not be as important as its perception.

According to the above and taking into account the findings on the importance of the perceived acceptance that one's behaviour will have, it would be reasonable to assume that, when the descriptive and injunctive norms are high, the regulative influence will also be high. However, the conclusion that individuals are incapable or unwilling to think for themselves and are exclusively governed by what others do, disregards the line of research in the field of human drive and learning, personal motives and self-efficacy. The way of communication and the similarity to the reference group have been pointed out as important mediating factors in the relationship between regulative effect and behaviour (Rimal, Lapinski, Cook, & Real, 2005; Rimal & Real, 2003). It has been noted that nicotine use is related to a more favourable norm regarding smoking among people of the same age and that this relation is stronger for those who identify with their social group compared to those whose identification is not very strong (Schofffild, Pattison, Hill, & Borland, 2001)

Nevertheless, taking into consideration the large number of studies ascertaining the relation between the descriptive norms concerning substance use and the use by the individuals themselves, in conjunction with studies that show that students tend to overestimate the percentages of peers that undertake substance use (and it seems that these estimates are more essential than the real extent of use), the importance of descriptive norms in studying addictive behaviours is proven to be of great importance.

However, individuals do not function only by means of imitating others' behaviours just because they believe that there are many who act in a certain way. In addition, they make estimates regarding the benefits and the consequences that may result by a given behaviour (outcome expectancies), a fact which is also supported by social cognitive theory (Rimal & Real, 2003).

Attitudes – Outcome Expectancies

Attitudes refer to the degree that someone is predisposed favourably towards an action. They are related to the negative or positive feelings that a person has regarding his/her performance and is a combination of his/her beliefs for the consequences of his/her engagement in that action, as well as the evaluation of these consequences (Sanderson, 2004).

It has been pointed out that the positive attitudes or else expectancies for the outcomes of an individual's engagement in actions that are characterised as high risk (among which substance use), are more significant compared to the respective negative ones (Fromme, Katz, & Rivet, 1997).

Parsons, Siegel, and Cousins (1997) concluded that, even though the perceived risks play some part in the decisions to participate in acts such as alcohol use and illegal substances as well as other risky behaviours, the perceived benefits predict, in a more powerful way, not only the intention for engagement in risky behaviours but also the actual involvement.

Alfonso and Dunn (2007) noted that adolescents who are involved in marijuana use consider their use in a positive way (they feel relaxed, happy, funny), while those who have never tried marijuana focus on its negative physical and psychological effects (addiction, bad health, slackness). Interpreting this finding, they suggest that focusing on the immediate (positive) and not on the future (negative) effects is what determines the outcome expectancies and thus the use. According to the theories of reasoned action and planned behaviour, people balance the possible pros and cons of a certain behaviour and act according to the outcomes of this analysis (Sarafino, 2006). It has been suggested, though, that attitudes do not constitute the strongest predictive variable of an action, but carry an indirect effect, affecting someone's intent to act in a certain way (Messer & Meldrum, 1995). Furthermore, it has been noted that individuals who smoke and consume alcohol have more positive attitudes towards substances in contrast to individuals who neither smoke nor drink (Best et al., 2000).

The role of outcome expectancies, however, has been pointed out with respect to other substances as well. For example, Engels and ter Bogt (2004) when studying the use of ecstasy pills at a party, found that expectancies related to the outcomes of the substance were significantly different between users and non-users, since those who had negative expectancies for the substance effects were more likely to refrain from use, while those who had positive expectancies were more likely to use ecstasy.

Leventhal and Schmitz (2006) suggest a model according to which the outcome expectancies may have a twofold function: *mediating* and *regulating* the outcome of other risk factors in the development of substance use. When studying the relation among descriptive norms, outcome expectancies and behaviour, Rimal et al. (2005) suggested that the former do not have an immediate control over behaviour, but that the estimated benefits of an action mediate the relation between descriptive norms and behavioural intent. In particular, when the participants in their study assumed that the profits of the involvement in a certain behaviour were high, the descriptive norm related positively with their behavioural intent.

The mediating role of outcome expectancies in the relation between norms and behaviour related to substance use has also been found in other studies, such as the one reported by Fearnow-Kenny, Wyrick, Hansen, Dyreg, and Beau (2001). In their study, it was shown that positive expectancies of alcohol consumption as well as conceptions of high general use and acceptance of alcohol use by peers is related to social and emotional problems that result from the use. In addition, it was found that expectancies regarding alcohol effects mediate, at least partially, the relation between norms and substance use related problems.

Self-Efficacy and Behaviour

Ajzen (1985) added to the theory of planned behaviour the principle of *perceived behavioural control* as a third influence factor of intentions, besides attitudes and subjective norms. It concerns the extent to which an individual thinks that they are able to successfully perform an action (Sanderson, 2004; Sarafino, 2006). According to Ajzen, the higher the perceived behavioural control concerning a particular act, the stronger the intent of this act will be. For example, a smoker who feels that they can control their smoking behaviour, is expected to have stronger intention to quit smoking compared to a smoker who does not feel that he/she is in control of that (Kaplan, Sallis, & Patterson, 1993).

Perceived behavioural control can be viewed as a result of previous behavioural experience, as well as of the individual's self-confidence to engage into a certain action in the future (Sanderson, 2004). This term is conceptually very relevant to Bandura's 'self-efficacy' (1977), which refers to someone's conceptions regarding their ability to organize and execute a series of actions that are necessary so that certain results are produced. It has been found that self-efficacy is related to a sense of personal control upon thoughts, emotions and behaviour (Brandon, Herzog, Irvin, & Gwaltney, 2004)

Beliefs on self-efficacy affect the way an individual reacts to a possible discrepancy between their behaviour and that of a model (i.e. respected figure). If one feels that the model's actions are within the boundaries of their capabilities, then s/he might attempt to reproduce them. If, however, one has low sense of self-efficacy with regards to a certain behaviour, then they will possibly hesitate to attempt it.

Resistance Self-Efficacy and Substance Use

Especially with regards to substance use, two types of self-efficacy are significant: self-efficacy regarding use, namely the persons' beliefs on their abilities to obtain and use substances, and self-efficacy regarding resistance, namely the persons' beliefs of their abilities to resist social pressure concerning the commencement of substance use (Petraitis, Flay, & Miller, 1995).

Based on Bandura's model, it is clearly indicated that strong ability to refrain from substance use (which is part of one's self-efficacy), for example not to be involved in smoking when others smoke or when they are under emotional stress, is related to a higher possibility of achieving and maintaining this refraining from use (Bandura, 1999). A person with a high sense of self-efficacy (for example as regards to quitting smoking), is expected to be more able to refuse cigarette offerings from friends. In addition, they may lengthen the effort not to be involved in smoking even if they relapse and smoke a cigarette at some occasion. In contrast, a person with low self-efficacy may exibit low resistance when he/she is faced with tempting cigarette offers and possibly return shortly to the previous level of use, after smoking one cigarette (Sanderson, 2004).

The Relation of Resistance Self-Efficacy and Outcome Expectancies in Prediction of Substance Use

Self-efficacy (and especially resistance self-efficacy, in the case of substance use) and outcome expectancies constitute the cognitive factors that, according to the social cognitive theory, affect substance use related behaviour. In some studies, the role of the two factors has been studied simultaneously, suggesting that the ability of a person to resist substance use and the preservation of positive expectancies regarding substance effects interact, defining the person's decision to be involved or not in substance use.

Oei and Jardim (2007), for example, found a significant interaction of the two variables in predicting alcohol consumption, suggesting that resistance self-efficacy may mediate the effect of outcome expectancies in the use. The results of this study showed, among other things, that lower resistance self-efficacy and higher outcome expectancies were related to higher alcohol consumption compared to the case that the latter were low.

Further, in the study of Hasking and Oei (2002), which included both a community and a clinical sample, a significant interaction was also found between outcome expectancies and resistance self-efficacy regarding the quantity of alcohol consumption. The results of Oei and Jardim's study (2007) revealed that, individuals with low resistance self-efficacy and low outcome expectancies present with lower alcohol use compared to individuals with low resistance self-efficacy and high outcome expectancies. Taken together, it is ascertained that overestimation of positive consequences that derive from substance use in contrast to negative ones, forms positive attitudes regarding use. This, combined with a sense of low resistance self-efficacy and with overestimation of the amount of peers who are involved in the respective behaviour, leads to intent and in turn to the decision for substance use.

Implications for Counselling Psychology

As it has already been mentioned, the variables included in the current literature review are described in social cognitive theory, which constitutes a significant part of training and counselling in the field of mental health. Indeed, many studies regarding alcohol and drug use prevention have focused on its principles (Ennett et al., 2003; Sharma, 2005).

In this sense, the current findings suggest specific points that have significant application to strategies, upon which emphasis should be given by the specialists who engage in the prevention and treatment of substance use in young adults.

Interventions Based on Outcome Expectancies

The current study indicates that when individuals are favourably predisposed towards substances, believing that their use will bring positive outcomes, they are more prone to get involved with them. Defining people's expectancies is, hence, significant because it might help recognise those who are in danger of developing addiction problems at a later stage.

It has been supported that designing messages which aim only at presenting the risks pertaining to substance use, would be ineffective, possibly because they would trigger a person's resistances and defences. In that sense, it is possible that messages which focus only on the negative effects and risks, and which are often employed by campaigns against substances, are overlooked since young adults may juxtapose their views on expected advantages from use. A more effective strategy, as Rimal and Real (2003) have pointed out, would be to include the

understanding of the opposite arguments formed by students when exposed to messages against substance use, for example the belief that the advantages resulting from use outnumber the disadvantages.

Therefore, campaigns against substances would be useful to disseminate messages that have an opposite impact on the expectancies of the benefits accumulated from use. Alternatively – at least in the case of alcohol – messages that depict the advantages of sensible consumption in contrast to the disadvantages of excessive consumption could be developed. Needless to say that it is very important that the messages should be both reliable and trustworthy. By focusing, only on the disadvantages deriving from use, the interventions would possibly cause strong opposite arguments from young people. On the other hand, focusing at the same time on the advantages deriving from avoiding use constitutes a more viable strategy.

Interventions Based on Norms

A great deal of attention has been given to the application of programs that focus on the role of social impact, considering substance use to be a result of model imitation and substance offering by peers. The purpose of these programs is, on the one hand, psychological empowerment, namely the gradual exposure of the individual to social influences so that they are rendered capable to resist powerful messages regarding substances, and on the other hand, their training regarding norms. Through this training, efforts are made to amend the inaccurate expectancies regarding the prevalence of substance use by peers and to adopt more realistic evaluations.

Flom, Friedman, Kottiri, Neaigus, and Curtis (2001) reported two ways through which intervention programs may affect the norms of people of the same age: altering the background of friends and the actual extent of use. Thus, interventions may aim at increasing the possibility that someone socializes with individuals opposed to drug use or, respectively, at increasing the actual number of people who oppose substance use. Of course, it should be noted here that emphasis should be given to the second part of intervention rather than on trying to alter one's social network, for the following reasons: by encouraging a person to seek friends with more antagonistic norms pertaining to drugs, the initial group of associated people of the same age are less likely to benefit. Secondly, it would be difficult to alter someone's social network as it could be composed of neighbours, siblings and other relatives.

On the other hand, however, some studies have failed to provide support for substance use reduction, as far as the role of providing messages regarding the actual levels of use is concerned. In the study of Wechsler et al. (2003), for example, no differences were found on monthly alcohol use or on the overall consumption between a group of students to whom a e intervention of norm training was applied and students who received no intervention. Clapp, Lange, Russell, Shillington, and Voas (2003) reported that the application of a similar intervention managed to alter participants' false ideas regarding the degree to which other students consume alcohol, but had no effect on their personal use.

Thombs, Dotterer, Olds, Sharp, and Raub (2004) however, provide a different reading. By applying an intervention of social promotion of norms pertaining to the reduction of alcohol use among students, which finally failed to fulfill its goal, they highlighted possible weaknesses and reasons that may have been responsible for the failure of such a program. In particular, they observed that the majority of participants found it difficult to comprehend the aim of the intervention and most of them were skeptical regarding the credibility of the campaign's messages. For example, it was found that many students believed that other participants concealed their actual level of substance use in

the relevant studies, and they preferred to rely on their personal experiences regarding prevalence of substance use (disregarding the data presented in the campaigns).

Therefore, it is apparent that in order for these interventions to succeed in affecting the personal norms related to the use of a substance, it is necessary that they become more comprehensible to their target group and reinforce the credibility of the provided messages regarding the prevalence of a behaviour. It is also suggested that the media may not be the most appropriate way to provide information about the norms and that a great number of individuals would benefit more from personally oriented consultations.

Training on Resistance Skills

The finding of this review that substance use is related and explained to a certain extent by resistance self-efficacy, illustrates that interventions that are based upon resistance skills (i.e. substance refusal skills, the ability to say 'no') are effective as regards to preventing individuals from use. It is suggested that individuals, even though most of the time recognize the significance of refusing substances that may be offered to them, have a difficulty to actually apply that resistance (Barkin, Smith, & Durant, 2002). Thus, according to the above, emphasis should be given to altering the behaviour per se, through training on certain skills, rather than altering the information regarding substances.

Training on resistance skills is based upon the conception that young people commence use mainly due to lack of self-esteem or abilities to resist social influences that urge them to smoking, alcohol or other illegal drug use. Therefore, these interventions aim to achieve the decrease of the possibility to use through learning to recognize and avoid high risk circumstances, namely circumstances where the individual is likely to be subjected to social pressure to use, by means of increasing awareness on the media influence as well as through reinforcing abilities to resist or deny substance use. Many studies have supported the efficacy of programs which are based on social impact pertaining to reducing tobacco use as well as alcohol and marijuana use (Botvin, 2000; Hansen & Graham, 1991).

However, a number of studies illustrate the need to combine different strategies in order to decrease the possibility of use.

Combined Interventions

More specifically, it has been supported that combined interventions that aim at *outcome expectancies, resistance self-efficacy* (i.e. a judgment about one's ability to avoid or reduce substance use in a number of specific situation that tempt use) but also at the *perceived peer norms*, might be equally or more effective compared to interventions that focus solely on one aspect. Botvin (2000), in his review on the current preventive programs, reports that correcting the beliefs regarding the levels of substance use is important in order for training programs on resistance skills to succeed.

Combined interventions have in many cases been proven to be successful regarding prevention from substance use. Griffin, Botvin, Nichols, and Doyle (2003), for example, examined the effectiveness of a preventive program on adolescents that were considered to be at high risk for substance use. This program involved the training of the participants on skills of use resistance, the reformation of their perceptions of norms regarding substance use, as well as training on personal and social skills that would help the individual to resist social pressures regarding use, such as self-control and anxiety management skills, communication and interaction skills. The results of their study showed that the group that was exposed to intervention presented fewer percentages of use in all substances

(alcohol, nicotine, inhalants, complicated substances) during the follow up measurement that took place a year later, compared to the control group, thus proving the value of combined interventions. The notion of the effectiveness of combined programs has also been also suggested in the case of designing substances prevention programs targeting adolescents (Lemstra et al., 2010) These findings emphasize the effectiveness of programs that are based on the viewpoint that substance use is the result of the interaction of both social and personal factors.

Conclusion

This review analyzed the impact of variables of the socio-cognitive theories (attitudes, descriptive norms, self-efficacy and outcome expectancies) on substance consumption by young adults, especially students. It was demonstrated that young people tend to overestimate the number of their peers who go through substance use and these false estimates affect the formation of their personal behaviour related to use. Apart from the descriptive norms, attitudes towards substances and their use as well as the outcome expectancies seem to be the factors that determine the decision whether to engage into use or not. On the other hand, this review shows that one's perception of his/her abilities regarding the implementation of a behaviour and more specifically the sense of self-efficacy to refuse substance use, constitutes a robust protective factor for the individual. Future studies might investigate whether the levels of resistance ability change when these substances are offered by people who hold a perceived significance and/or power (in relation to people who are not considered important/powerful). Another course of study could examine the possible mediating effect of certain personality characteristics (e.g. conscientiousness, neuroticism) on the outcome expectancies or the ability to resist and the anticipated or current substance use.

Funding

The authors have no funding to report.

Competing Interests

The authors have declared that no competing interests exist.

Acknowledgments

The authors have no support to report.

References

Aitken, S. S., DeSantis, J., Harford, T. C., & Caces, M. F. (2000). Marijuana use among adults: A longitudinal study of current and former users. *Journal of Substance Abuse, 12*, 213-226. doi:10.1016/S0899-3289(00)00051-1

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl, & J. Beckmann (Eds.), *Springer Series in Social Psychology: Action control: From cognition to behavior* (pp. 11-39). Berlin, Germany: Springer. doi:10.1007/978-3-642-69746-3_2

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211. doi:10.1016/0749-5978(91)90020-T

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior.* Englewood Cliffs, NJ: Prentice-Hall.

Alfonso, J., & Dunn, M. E. (2007). Differences in the marijuana expectancies of adolescents in relation to marijuana use. *Substance Use & Misuse, 42*, 1009-1025. doi:10.1080/10826080701212386

Arnett, J. J. (2005). The developmental context of substance use in emerging adulthood. *Journal of Drug Issues, 35*(2), 235-254. doi:10.1177/002204260503500202

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215. doi:10.1037/0033-295X.84.2.191

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1999). A sociocognitive analysis of substance abuse: An agentic perspective. *Psychological Science, 10*(3), 214-217. doi:10.1111/1467-9280.00138

Barkin, S. L., Smith, K. S., & Durant, R. H. (2002). Social skills and attitudes associated with substance use behaviors among young adolescents. *The Journal of Adolescent Health, 30*, 448-454. doi:10.1016/S1054-139X(01)00405-0

Best, D., Rawaf, S., Rowley, J., Floyd, K., Manning, V., & Strang, J. (2000). Drinking and smoking as concurrent predictors of illicit drug use and positive drug attitudes in adolescents. *Drug and Alcohol Dependence, 60*, 319-321. doi:10.1016/S0376-8716(00)00113-7

Botvin, G. J. (2000). Preventing drug abuse in schools: Social and competence enhancement approaches targeting individual-level etiologic factors. *Addictive Behaviors, 25*(6), 887-897. doi:10.1016/S0306-4603(00)00119-2

Botvin, G. J., Baker, E., Botvin, E. M., Dusenbury, L., Cardwell, J., & Diaz, T. (1993). Factors promoting cigarette smoking among black youth: A causal modeling approach. *Addictive Behaviors, 18*, 397-405. doi:10.1016/0306-4603(93)90056-F

Brandon, T. H., Herzog, T. A., Irvin, H. J., & Gwaltney, C. J. (2004). Cognitive and social learning models of drug dependence: Implications for the assessment of tobacco dependence in adolescents. *Addiction, 99*(Suppl. 1), 51-77. doi:10.1111/j.1360-0443.2004.00737.x

Bromley, D. B. (1986). *The case-study method in psychology and related disciplines.* Chichester, United Kingdom: Wiley.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*, 1015-1026. doi:10.1037/0022-3514.58.6.1015

Clapp, J. D., Lange, J. E., Russell, C., Shillington, A., & Voas, R. B. (2003). A failed norm social marketing campaign. *Journal of Studies on Alcohol, 64*(3), 409-414.

Dawson, D. A., Grant, B. F., Stinson, F. S., & Chou, P. S. (2004). Another look at heavy episodic drinking and alcohol use disorders among college and noncollege youth. *Journal of Studies on Alcohol, 65*(4), 477-488.

Duhig, A. M., Cavallo, D. A., McKee, S. A., George, T. P., & Krishnan-Sarin, S. (2005). Daily patterns of alcohol, cigarette, and marijuana use in adolescent smokers and nonsmokers. *Addictive Behaviors, 30*, 271-283. doi:10.1016/j.addbeh.2004.05.016

Edwards, D. J. A. (1998). Types of case study work: A conceptual framework for case-based research. *Journal of Humanistic Psychology, 38*(3), 36-70. doi:10.1177/00221678980383003

Elek, E., Miller-Day, M., & Hecht, M. L. (2006). Influences of personal, injunctive, and descriptive norms on early adolescent substance use. *Journal of Drug Issues, 36*(1), 147-172. doi:10.1177/002204260603600107

Engels, R. C. M. E., & ter Bogt, T. (2004). Outcome expectancies and ecstacy use in visitors of rave parties in the Netherlands. *European Addiction Research, 10*, 156-162. doi:10.1159/000079836

Ennett, S. T., Ringwalt, C. L., Thorne, J., Rohrbach, L. A., Vincus, A., Simons-Rudolph, A., & Jones, S. (2003). A comparison of current practice in school-based substance use prevention programs with meta-analysis findings. *Prevention Science, 4*(1), 1-14. doi:10.1023/A:1021777109369

Fearnow-Kenny, M. D., Wyrick, D. L., Hansen, W. B., Dyreg, D., & Beau, D. B. (2001). Normative beliefs, expectancies, and alcohol-related problems among college students: Implications for theory and practice. *Journal of Alcohol and Drug Education, 47*(1), 31-44.

Flom, P. L., Friedman, S. R., Kottiri, B. J., Neaigus, A., & Curtis, R. (2001). Recalled adolescent peer norms towards drug use in young adulthood in a low-income, minority urban neighborhood. *Journal of Drug Issues, 31*(2), 425-444.

Fontana, J. S. (2004). A methodology for critical science in nursing. *ANS: Advances in Nursing Science, 27*(2), 93-101. doi:10.1097/00012272-200404000-00003

Fromme, K., Katz, E. C., & Rivet, K. (1997). Outcome expectancies and risk-taking behavior. *Cognitive Therapy and Research, 21*(4), 421-442. doi:10.1023/A:1021932326716

Gledhill-Hoyt, J., Lee, H., Strote, J., & Wechsler, H. (2000). Increased use of marijuana and other illicit drugs at US colleges in the 1990s: Results of three national surveys. *Addiction, 95*(11), 1655-1667. doi:10.1046/j.1360-0443.2000.951116556.x

Griffin, K. W., Botvin, G. J., Nichols, T. R., & Doyle, M. M. (2003). Effectiveness of a universal drug abuse prevention approach for youth at high risk for substance use initiation. *Preventive Medicine, 36*, 1-7. doi:10.1006/pmed.2002.1133

Hansen, W. B., & Graham, J. W. (1991). Preventing alcohol, marijuana, and cigarette use among adolescents: Peer pressure resistance training versus establishing conservative norms. *Preventive Medicine, 20*, 414-430. doi:10.1016/0091-7435(91)90039-7

Hasking, P. A., & Oei, T. P. S. (2002). The differential role of alcohol expectancies, drinking refusal self-efficacy and coping resources in predicting alcohol consumption in community and clinical samples. *Addiction Research and Theory, 10*(5), 465-494. doi:10.1080/1606635021000034049

Iannotti, R. J., & Bush, P. J. (1992). Perceived vs. actual friends' use of alcohol, cigarettes, marijuana, and cocaine: Which has the most influence? *Journal of Youth and Adolescence, 21*(3), 375-389. doi:10.1007/BF01537024

Jootun, D., McGhee, G., & Marland, G. R. (2009). Reflexivity: Promoting rigour in qualitative research. *Nursing Standard, 23*(23), 42-46. doi:10.7748/ns2009.02.23.23.42.c6800

Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin, 26*(8), 1002-1012. doi:10.1177/01461672002610009

Kaplan, R. M., Sallis, J. F., & Patterson, T. L. (1993). *Health and human behavior*. New York, NY: McGraw-Hill.

Kilmer, J. R., Walker, D. D., Lee, C., Palmer, R., Mallett, K. A., Fabiano, P., & Larimer, M. E. (2006). Misperceptions of college student marijuana use: Implications for prevention. *Journal of Studies on Alcohol, 67*(2), 277-281.

Kokkevi, A., Loukadakis, M., Plagianakou, S., Politikou, K., & Stefanis, C. (2000). Sharp increase in illicit drug use in Greece: Trends from a general population survey on licit and illicit drug use. *European Addiction Research, 6*, 42-49. doi:10.1159/000019008

Kokkevi, A., & Stefanis, C. (1991). The epidemiology of licit and illicit substance use among high school students in Greece. *American Journal of Public Health, 81*(1), 48-52. doi:10.2105/AJPH.81.1.48

Kokkinaki, F. (2005). *Social psychology: Introduction to the study of social behaviour.* Athens, Greece: Tipothito Publishers.

Lapinski, M. K., & Rimal, R. N. (2005). An explication of social norms. *Communication Theory, 15*, 127-147. doi:10.1111/j.1468-2885.2005.tb00329.x

Lemstra, M., Bennett, N., Nannapaneni, U., Neudorf, C., Warren, L., Kershaw, T., & Scott, C. (2010). A systematic review of school-based marijuana and alcohol prevention programs targeting adolescents aged 10-15. *Addiction Research and Theory, 18*(1), 84-96. doi:10.3109/16066350802673224

Leventhal, A. M., & Schmitz, J. M. (2006). The role of drug use outcome expectancies in substance abuse risk: An interactional-transformational model. *Addictive Behaviors, 31*, 2038-2062. doi:10.1016/j.addbeh.2006.02.004

Madianos, M., Madianou, G. D., & Stefanis, C. N. (1995). The epidemiology of illicit and licit drug use in Greece: A nationwide general population survey. *European Psychiatry, 10*, 175-182. doi:10.1016/0767-399X(96)80061-7

Marks, D. F., Murray, M., Evans, B., & Willig, C. (2000). *Health psychology: Theory, research and practice*. London, United Kingdom: Sage.

Martens, M. P., Page, J. C., Mowry, E. S., Damann, K. M., Taylor, K. K., & Cimini, M. D. (2006). Differences between actual and perceived student norms: An examination of alcohol use, drug use, and sexual behavior. *Journal of American College Health, 54*(5), 295-300. doi:10.3200/JACH.54.5.295-300

McMurran, M. (1997). *The psychology of addiction*. London, United Kingdom: Taylor & Francis.

Messer, D., & Meldrum, C. (1995). *Psychology for nurses and health care professionals*. London, United Kingdom: Prentice Hall/ Harvester Wheatsheaf.

Mohler-Kuo, M., Lee, J. E., & Wechsler, H. (2003). Trends in marijuana and other illicit drug use among college students: Results from 4 Harvard School of public health college alcohol study surveys: 1993-2001. *Journal of American College Health, 52*(1), 17-24. doi:10.1080/07448480309595719

Oei, T. P. S., & Jardim, C. L. (2007). Alcohol expectancies, drinking refusal self-efficacy and drinking behavior in Asian and Australian students. *Drug and Alcohol Dependence, 87*, 281-287. doi:10.1016/j.drugalcdep.2006.08.019

Olds, R. S., & Thombs, D. L. (2001). The relationship of adolescent perceptions of peer norms and parent involvement to cigarette and alcohol use. *The Journal of School Health, 71*(6), 223-228. doi:10.1111/j.1746-1561.2001.tb01322.x

O'Malley, P. M., & Johnston, L. D. (2002). Epidemiology of alcohol and other drug use among American college students. *Journal of Studies on Alcohol, 14*, 23-39.

Parahoo, K. (2006). *Nursing research: Principles, process and issues* (2nd ed.). Basingstoke, United Kingdom: Palgrave Macmillan.

Parsons, J. T., Siegel, A. W., & Cousins, J. H. (1997). Late adolescent risk-taking: Effects of perceived benefits and perceived risks on behavioral intentions and behavioral change. *Journal of Adolescence, 20*, 381-392. doi:10.1006/jado.1997.0094

Passos, S. R. L., Brasil, P. E. A., Santos, M. A. B., & Aquino, M. T. C. (2006). Prevalence of psychoactive drug use among medical students in Rio de Janeiro. *Social Psychiatry and Psychiatric Epidemiology, 41*(12), 989-996. doi:10.1007/s00127-006-0114-7

Pedersen, W. (1993). The majority fallacy reconsidered. *Acta Sociologica, 36*, 343-355. doi:10.1177/000169939303600403

Perkins, H. W. (2007). Misperceptions of peer drinking norms in Canada: Another look at the “reign of error” and its consequences among college students. *Addictive Behaviors, 32*, 2645-2656. doi:10.1016/j.addbeh.2007.07.007

Perkins, H. W., Meilman, P. W., Leichliter, J. S., Cashin, J. R., & Presley, C. A. (1999). Misperceptions of the norms for the frequency of alcohol and other drug use on college campuses. *Journal of American College Health, 47*(6), 253-258. doi:10.1080/07448489909595656

Petraitis, J., Flay, B. R., & Miller, T. Q. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. *Psychological Bulletin, 117*(1), 67-86. doi:10.1037/0033-2909.117.1.67

Reed, M. B., Wang, R., Shillington, A. M., Clapp, J. D., & Lange, J. E. (2007). The relationship between alcohol use and cigarette smoking in a sample of undergraduate college students. *Addictive Behaviors, 32*, 449-464. doi:10.1016/j.addbeh.2006.05.016

Richter, K. P., Ahluwalia, H. K., Mosier, M. C., Nazir, N., & Ahluwalia, J. S. (2002). A population-based study of cigarette smoking among illicit drug users in the United States. *Addiction, 97*, 861-869. doi:10.1046/j.1360-0443.2002.00162.x

Rimal, R. N., Lapinski, M. K., Cook, R. J., & Real, K. (2005). Moving toward a theory of normative influences: How perceived benefits and similarity moderate the impact of descriptive norms on behaviors. *Journal of Health Communication, 10*, 433-450. doi:10.1080/10810730591009880

Rimal, R. N., & Real, K. (2003). Understanding the influence of perceived norms on behaviors. *Communication Theory, 13*(2), 184-203. doi:10.1111/j.1468-2885.2003.tb00288.x

Sanderson, C. A. (2004). *Health psychology*. London, United Kingdom: John Wiley and Sons.

Sarafino, E. P. (2006). *Health psychology: Biopsychosocial interactions* (5th ed.). London, United Kingdom: John Wiley and Sons.

Schofffild, P. E., Pattison, P. E., Hill, D. J., & Borland, R. (2001). The influence of group identification on the adoption of peer group smoking norms. *Psychology & Health, 16*, 1-16. doi:10.1080/08870440108405486

Schorling, J. B., Gutgesell, M., Klas, P., Smith, D., & Keller, A. (1994). Tobacco, alcohol and other drug use among college students. *Journal of Substance Abuse, 6*, 105-115. doi:10.1016/S0899-3289(94)90143-0

Sharma, M. (2005). Enhancing the effectiveness of alcohol and drug education programs through social cognitive theory. *Journal of Alcohol and Drug Education, 49*(3), 3-7.

Strote, J., Lee, J. E., & Wechsler, H. (2002). Increasing MDMA use among college students: Results of a national survey. *The Journal of Adolescent Health, 30*, 64-72. doi:10.1016/S1054-139X(01)00315-9

Thombs, D. L., Dotterer, S., Olds, S., Sharp, K. E., & Raub, C. G. (2004). A close look at why one social norms campaign did not reduce student drinking. *Journal of American College Health, 53*(2), 61-68. doi:10.3200/JACH.53.2.61-70

Webb, E., Ashton, C. H., Kelly, P., & Kamali, F. (1996). Alcohol and drug use in UK university students. *Lancet, 348*, 922-925. doi:10.1016/S0140-6736(96)03410-1

Wechsler, H., Nelson, T. F., Lee, J. E., Seibring, M., Lewis, C., & Keeling, R. P. (2003). Perception and reality: A national evaluation of social norms marketing interventions to reduce college students' heavy alcohol use. *Journal of Studies on Alcohol, 64*(4), 484-494.

Wolfson, S. (2000). Students' estimates of the prevalence of drug use: Evidence for a false consensus effect. *Psychology of Addictive Behaviors, 14*(3), 295-298. doi:10.1037/0893-164X.14.3.295

World Health Organization. (2009). *Evidence for the effectiveness and cost-effectiveness of interventions to reduce alcohol-related harm*. Copenhagen, Denmark: WHO Regional Office for Europe World Health Organization.