

The Evaluation of Proximity Interventions: A Pilot Study

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Abstract

Although in recent years substance addiction prevention programs and practices have increased, the majority of cases for these activities, in particular proximity interventions, lack the implementation of adequate assessment processes. This is also due to the absence of evaluation procedures and shared theoretical reference models. This study constitutes the first step of a larger research project aimed at assessing the effects of proximity interventions. In particular, the study describes the relationship among the frequency of substance intake or implementation of problem behaviour, stage of change as well as factors of vulnerability and protection. The study also demonstrates that the evaluation system adopted is able to detect the differences between various periods of change of course in which the frequency of problematic behaviour assumes significance in relation to psychological variables and context.

Keywords

Proximity Intervention, Transtheoretical Model of Change, Factors of Vulnerability and Protection, Addiction, Adolescence, Novelty Seeking

1. Introduction

According to the European Monitoring Centre for drugs and drug addiction (European Monitoring Centre for Drugs and Drug Addiction, 2016), more than 88 million adults (i.e. just over a quarter of the population aged between 15 and 64 years in the European Union) have tried illicit drugs in their lifetime. Prevalence of cannabis use was about five times higher than that of other substances consumption, and it is mainly concentrated among young people (15 - 34 years old) estimated that in 2015 they did drugs. 17.8 million young adults; of these, males were twice as many as females. In particular, 16.6 million (13.3% of the

population) have used cannabis, 2.4 million (1.9%) have used cocaine, 2.1 million (1.7%) of MDMA and 1.3 million (1%) of amphetamines among drug users spread polydrug use and individual models ranging from experimental than usual consumption until the addiction to cope with this situation, and intervention of proximity is located in the area of selective and indicated prevention.

The Transtheoretical Model of Change (Prochaska & DiClemente, 1982; Prochaska & DiClemente, 1984) is one of the most used theoretical models in the field of preventive therapies and health promotion. According to the authors, change is not an “all or nothing” phenomenon, rather a gradual process that goes through specific stages, following a cyclical and progressive path (Figure 1). The stages of change include: Precontemplation: the subject has not yet considered the possibility of changing their behaviour. Contemplation: the subject reflects on the positive and negative aspects of their situation and begins to consider the possibility to change their behaviour. Preparation: the subject decides to change their behaviour and plans for action. Action: the subject acts to change their own situation. Maintenance: a phase of stabilization of the implemented change.

Unfortunately, such stage construct of change is a non-linear path, that is, a subject who has reached a specific phase can also regress to earlier stages (DiClemente, 1994; DiClemente, 1999). Moreover, the construct is a cyclic path; once change has been implemented, subjects can relapse and set back to a new phase of Contemplation.

This model has been pointed out, inter alia, effective prevention interventions carried out in schools (Serafini, Shipley, & Stewart, 2016).

Factors of vulnerability and protection are those factors that can facilitate or otherwise hinder the expression of user behaviour or substance abuse (European Monitoring Centre for Drugs and Drug Addiction, 2009). The main factors of vulnerability and protection considered by the European Observatory are families (composition, conflicts, employment status, substance use by family members),

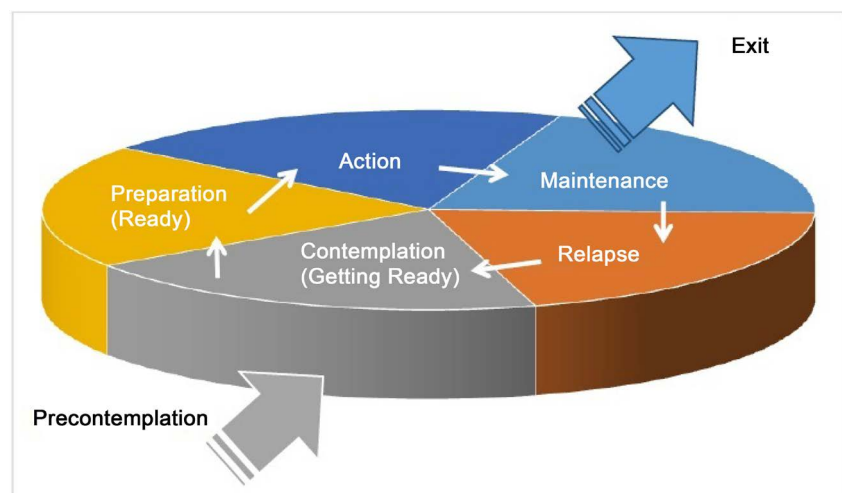


Figure 1. Stages of change.

school (education achievement versus dropping at early age), type of substance (marketable availability, social tolerance for its use), expectation (substance related roles within a group setting) and environmental degradation of the life-area.

Numerous studies demonstrate the existence of a strong correlation between those factors and substance use (McCarty, Rhew, Murowchick, McCauley, & Vander Stoep, 2012; Sitnick, Shaw, & Hyde, 2014; Marschall-Lévesque, Castellanos-Ryan, Vitaro, & Séguin, 2014).

Beside these factors, special attention was placed on novelty seeking personality. According to the Cloninger model (Cloninger, Svrakic, & Przybeck, 1993), the pursuit of new experiences is defined as the inherent tendency to react with excitement to the stimuli or situations involving new experiences. This temperament trait involves a high tendency for exploration, impulsivity and low frustration tolerance. Individual with a novelty seeking personality gets often involved in illegal activities, practice extreme sports and leisures and has stormy relationships.

Numerous studies demonstrate the existence of a strong correlation between personality novelty seeking and substance use (Kosten, Ball, & Rounsaville, 1994; Zuckerman, 1994; Ball, 2004; Wills, Windle, & Cleary, 1998; Bardo, Neisewander, & Kelly, 2013).

In recent years substance addiction prevention programmes and practices have increased in Italy, as well as in all EU countries (European Monitoring Centre for Drugs and Drug Addiction, 1998). However, in most cases for these activities, in particular, proximity interventions, there lacks the implementation of adequate assessment processes (European Monitoring Centre for Drugs and Drug Addiction, 2013). This is also due to the absence of evaluation procedures and shared theoretical reference models.

This study constitutes the first step of a larger research project aimed at assessing the effects of proximity interventions.

As part of a pre-experimental research design (the only group with pre-testing and post-testing), the study particularly investigates, the relationship between certain significant variables for the evaluation of such interventions and the evaluation of the subjects taking part.

Moreover, the study aims to show that the evaluation system adopted is able to detect the differences between various periods of change of course in which the frequency of the problematic behaviour assumes significance in relation to psychological variables and context.

In particular the study wants to see whether there are differences concerning the frequency of intake of substances of abuse and frequency of problematic behavior, measured before and after the intervention of proximity; If there is a correlation between these frequencies and the stages of Change model of Prochaska and DiClemente hypothesized; If there is a correlation between these frequencies and vulnerability factors and protection.

2. Materials and Methods

2.1. Samples

The research was held in Imola, near Bologna, Italy, in the period between 1/2/2012 and 12/31/2014.

The subjects involved are all the patients drug use service Azienda USL di Imola taken care of through the use of proximity in the reporting period.

The study took part in 57 subjects, proximity operators carrying out interventions reported by family members, friends, health and socio-educational agencies or they themselves were asked to participate in the activities. Similarly to users who log on directly to drug use, all participants have signed the forms for privacy and informed consent. Neighbourhood interventions were preceded and followed by a collection of information on topics, including a survey of the type of substance used and the frequency of use, the administration of the questionnaire Mac and detecting the presence of vulnerabilities and protection. The data were processed with SPSS. Pretest and posttest comparisons were performed (Wicolxon test) and analyzed the differences between subject novelty seeker and subjects which are not (Mann-Whitney test).

2.2. MAC/E Questionnaire

For the evaluation of subjects before and after proximity intervention, we used the MAC/E Questionnaire, originally designed for the evaluation of motivation to change in heroin addiction.

Developed on the Transtheoretical Model of Change, the questionnaire includes 7 scales:

Precontemplation, Contemplation, Preparation and Action, which measure the degree to which the subject falls into one of the specific stages of the path of change. Conventionally, the subject is treated in the stage of change which receives the highest score.

- The Discrepancy scale measures the degree which the subject perceives themselves to be different from what they would prefer to be.
- The Self-efficacy scale measures the degree of the subject perceives themselves to be able to effect change in their life.
- The Reliability scale measures the reliability of the answers provided by the subject.

The MAC/E Questionnaire is a tool which has been proven to be valid and reliable (Spiller & Guelfi, 1998).

2.3. Proximity Interventions

Subjects who take part in proximity interventions access them through:

- direct requests or requests from family members, or health agencies and socio-educational courses directly through services that deal with pathological addictions;
- requests from networks of friends where there are users already in charge;
- requests from knowledge networks actively involved in the territory of the

educator.

It deals with subjects not available, at least initially, to carry out the normal course of treatment at the Pathological Addictions Services.

Similarly, for users that directly access the services for pathological addictions, the participants of proximity interventions sign privacy and informed consent forms.

The proximity interventions implemented by the educators of the Service, are divided into different phases:

- Welcoming/Reception Phase. This phase includes preliminary meetings in the territory, very informal, and focused on shared knowledge and observation; this phase evaluates the factors of vulnerability and addiction protection.
- Trust Building Phase. Includes meetings carried out in the territory on a bi-monthly state for a maximum of six months. This phase is aimed at encouraging the creation of a relationship built on trust. Meetings are free of judgment, focus on therapeutic support, counselling and info-educational activities (published scientific material).
- Therapy Designing Phase. In this phase the shared design with the possibility of continued proximity intervention, interruption and integration into semi-residential communities.

Throughout the course of the three phases described above, recreational, cultural and sport activities are also carried out, as well as role-playing, social rehabilitation and educational programs.

In our clinical practice of proximity interventions they are usually preceded and followed by a collection of information on the test subject, which includes:

- a survey of the type of substance used and the frequency of its use, according to what is reported by the subject.
- the administration of the Mac/E Questionnaire (Spiller & Guelfi, 1998) that, under the Transtheoretical Model of Change proposed by Prochaska and DiClemente (1984), defines what stage of the path of change the subject is at.
- a survey according to reports made by the subjects, the presence of vulnerability and protective factors facilitating or otherwise hindering the manifestation of user behaviour or particular substance abuse (European Monitoring Centre for Drugs and Drug Addiction, 2009).

3. Factors of Vulnerability and Protection

For the purposes of our investigation, we have classified as novelty seekers those subjects who indicated the pursuit for new experiences as the main motivation behind the use of illicit substances or problematic behaviour.

4. Results

The study consists of 57 subjects made up of 52 males and 5 females with a mean age of 19 years at time of recruitment. Approximately 50% of the subjects were users of cannabinoids, while the remaining 50% use alcohol, heroin, cocaine, has

behaviour addictions or does not present a real condition of addiction. Forty-one subjects (72% of the sample) of which to be novelty seekers and 16 subjects (28% of the sample) didn't. In **Table 1** the socio-demographic and clinical characteristic of the study population are described.

We first compared the MAC/E Questionnaire scores given before and after the proximity interventions. The results, as seen in **Table 2**, show the expected changes according to the Transtheoretical Model of Change (reduction of the scores related to the phase of Precontemplation, higher scores at the stages of Contemplation, Preparation and Action, as well as an increase of scores regarding the Discrepancy scale and the Self-efficacy scale).

There are also differences between pre-testing and post-testing with regards to frequency of substance intake or the implementation of problem behaviours (**Figure 2**). The frequency of intake is also correlated with the scores obtained in the various steps of the MAC/E Questionnaire (**Table 3**).

Also important to note is the role played by factors of vulnerability and protection. We first calculated for such factors an overall single score (including the scores given for those variables such as "education", "employment status", "sports", "life skills", "meaningful relationships", "trust in the service"). This

Table 1. Socio-demographic and clinical characteristic of the study population.

	Total	Novelty seeker		<i>p</i>
		yes	no	
Subjects	57	41	16	-
Females	5	4	1	<i>p</i> > 0.1
Males	52	37	15	
Age at t_0 (mean and standard deviation)	19.0 (6.7)	18.5 (4.2)	20.5 (11)	<i>p</i> > 0.1
Level of schooling at t_0 (median)	Junior high school	Junior high school	Junior high school	<i>p</i> > 0.1
N. of unemployed at t_0	55	40	15	<i>p</i> > 0.1
Users of cannabinoids	29	27	2	<i>p</i> < 0.001
Users of other substances	28	14	14	

Table 2. Differences between pre-test and post-test of the MAC/E Questionnaire scales.

MAC/E Scale	Average (median) Pre-test	Average (median) Post-test	Significance of the Wilcoxon Test
Precontemplation	8.19 (9)	5.56 (6)	<i>p</i> < 0.001
Contemplation	6.49 (7)	7.37 (7)	<i>p</i> < 0.01
Preparation	3.74 (2)	6.07 (6)	<i>p</i> < 0.001
Action	3.68 (0)	5.93 (5)	<i>p</i> < 0.001
Discrepancy	3.63 (1)	5.77 (5)	<i>p</i> < 0.001
Self-efficacy	4.25 (3)	5.79 (5)	<i>p</i> < 0.001
Reliability	9.98 (10)	9.44 (10)	<i>p</i> < 0.05

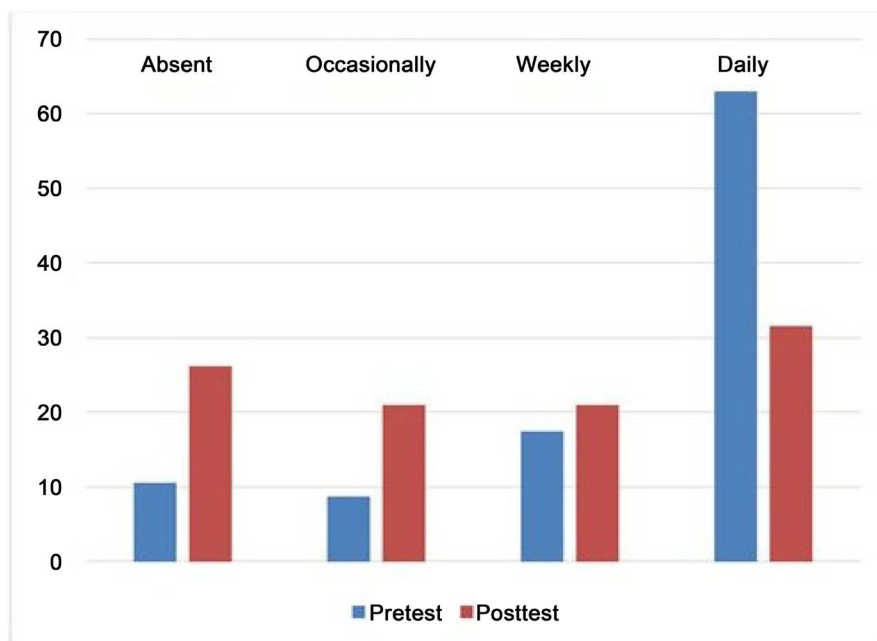


Figure 2. Frequency of intake of substances or implementation of problem behaviours before and after proximity intervention.

Table 3. Correlation between frequency of substance intake or implementation of problem behaviours and MAC/E Questionnaire scales (showing only the statistically significant results).

MAC/E Scale	Spearman's rank correlation coefficient	Level of Significance	Degree of Correlation
Precontemplation			
Contemplation			
Preparation	-0.3461	$p < 0.01$	Medium
Action	-0.3566	$p < 0.01$	Medium
Discrepancy	-0.5112	$p < 0.001$	High
Self-efficacy	-0.3427	$p < 0.01$	Medium
Reliability	0.2642	$p < 0.05$	Low

score is significantly higher in post-testing phase than the pre-testing phase ($z = 4.824$, $p < 0.001$), as well as being significantly correlated with the motivation to change (**Table 4**).

The frequency of substance use or problem behaviour is significantly lower for non novelty-seekers, both for pre-testing ($z = -3.982$, $p < 0.001$), and post-testing phases ($z = -4.526$, $p < 0.001$).

In the end, non novelty seeker subjects obtained significantly higher scores with regards to the discrepancy variable, both during pre-testing ($z = 2.456$, $p < 0.05$) and post-testing phases ($z = 2.720$, $p < 0.01$). Moreover, novelty seeker subjects, prefer so-called "light" substances with lower risks to health, but at the same time tend to use them more frequently and are able to manage their usage of substances with less problems.

Table 4. Correlation between scores for vulnerability and protective factors and MAC/E Questionnaire scales (only statistically significant results are reported).

MAC/E Scale	Spearman's rank correlation coefficient	Level of Significance	Degree of Correlation
Precontemplation	-0.4198	$p < 0.01$	Medium
Contemplation	0.2822	$p < 0.05$	Low
Preparation	0.5541	$p < 0.001$	High
Action	0.5124	$p < 0.001$	High
Discrepancy	0.4673	$p < 0.001$	Medium
Self-efficacy	0.4876	$p < 0.001$	Medium
Reliability			

5. Discussion

The results of the study show that between pretest and post test occurred the expected changes depending on the model of Prochaska and DiClemente as well as a reduction in the frequency of uptake or implementation of problematic behavior. This frequency is correlated with the stage of the path of change, both through the presence of vulnerabilities or protective measures. Finally, the study allows to observe that there are significant differences between subjects novelty seeker and those that are not. The first prefer substances that pose fewer health risks, but also tend to more frequent use and live in a less problematic use of substances.

Our research confirms the findings of the studies reported in the introduction with regard to the correlation between drugs and factors of vulnerability and protection, in particular for the personality novelty seeking. Our research also demonstrates the existence of a significant correlation between stage of change and frequency of intake of the substance or implementation of problematic behavior. It demonstrates that the change is significantly correlated with the vulnerability factors and protection.

6. Methodological Evaluation

From a methodological standpoint, the study underlines the possibility take into account the considerable amount of data that is usually collected for clinical purposes to be used for research purposes.

At the same time, the study also highlights some methodological issues worthy of discussion, as they are typical of education research.

First, the desire to describe the phenomena of complex educational research allows, in general, to obtain limited external validity of results.

The study results, which describe the relationship between the frequency of substance intake or problem behaviour and psychological variables as well as context due to the complexity of the phenomenon described, are not automatically generalizable to other subjects, situations or places.

In order to solve the problem, at least in part, we have attempted to describe the sample in great depth by detecting the values of the various potential “intervening” variables to influence the observed correlations.

A second important issue concerns the internal validity of the research developed in the context of participant observation. In the interaction with subjects, the educator in the field who implements the intervention or collects data that will be used for research purposes may transmit assumptions that could affect the results obtained.

In order to limit the possible distortion of the results, we used, where possible, measurement tools with proven validity and reliability. In other cases we have defined standardized procedures for collecting information, considering the convergence of assessments made by educators, psychiatrists and other professionals involved in the treatment.

Finally, it is also important to emphasize the issue of the validity of theoretical constructs and the ability to give a functional definition.

Educational research often draws on theoretical models not commonly shared. The research results show that hypotheses are effective only in the light of a specific theoretical model, while at the same time, validating this model.

7. Conclusion

Although the research design used in the study does not allow attributing the differences between pre- and post-testing to the proximity intervention carried out, our findings demonstrate the discriminative ability of a complex evaluation system. The inclusion in the evaluation system of indicators such as the frequency of substance intake, problem behaviours, as well as psychological variables and social context characteristics underlines the usefulness and the possibility to use the considerable amount of data usually collected for clinical purposes, also for research purposes.

We are going to implement this system in further longitudinal research to assess the effects of our proximity interventions.

In addition, the relationships observed between problem behaviour, motivation to change and factors of vulnerability and protection offer interesting insights for further study especially in the field of education, where there is a urgent need to describe systematically complex phenomena.

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