

Crisis Intervention Related to the Use of Psychoactive Substances in Recreational Settings - Evaluating the Kosmicare Project at Boom Festival

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Abstract: Kosmicare project implements crisis intervention in situations related to the use of psychoactive substances at Boom Festival (Portugal). We present evaluation research that aims to contribute to the transformation of the project into an evidence-based intervention model. It relies on harm reduction and risk minimization principles, crisis intervention models, and Grof's psychedelic psychotherapy approach for *crisis intervention in situations related to unsupervised use of psychedelics*. Intervention was expected to produce knowledge about the relation between substance use and mental health impact in reducing potential risk related to the use of psychoactive substances and mental illness, as well as an impact upon target population's views of themselves, their relationship to substance use, and to life events in general. Research includes data on process and outcome indicators through a mixed methods approach, collected next to a sample of n=176 participants. Sample size varied considerably, however, among different research measures. 52% of Kosmicare visitors reported LSD use. Over 40% also presented multiple drug use. Pre-post mental state evaluation showed statistically significant difference ($p < .05$) confirming crisis resolution. Crisis episodes that presented no resolution were more often related with mental health outburst episodes, with psychoactive substance use or not. Visitors showed high satisfaction with intervention (n=58) and according to follow-up (n=18) this perception was stable over time. Crisis intervention was experienced as very significant. We discuss limitations and implications of evaluating natural setting based interventions, and the relation between psychoactive substance use and psychopathology. Other data on visitor's profile and vulnerability to crisis showed inconclusive.



Keywords: Crisis intervention, evaluation research, harm reduction and risk minimization, mental health disorders, psychoactive substance use, recreational environments.

INTRODUCTION AND FRAMEWORK

Over the last decades we have witnessed considerable transformation in psychoactive substance (PAS) use patterns that have also been observable in Portuguese nightlife and outdoor recreational environments. After an initial period (2001-2007) during which illicit drug use indicators in general population showed an increase, the period between 2007-2012 was marked in Portugal by a slight reduction and stabilization, observable in lifetime use but also in last month and last year indicators [1, 2]. In Portugal, when the general population is asked about preferred PAS use environments, recreational settings come up largely dominant, whether in the form of calendar events such as new-years' eve parties

47%), techno-raves (25%) or trance parties (19%) [3]. According to Fletcher, Calafat, Pirona and Olzewski [4] (*recreational substance use* "concerns the use of PAS that takes place for pleasure, typically with friends, in either formal recreational settings, such as nightclubs, and/or informal settings, such as on the streets and in the home" (p.357). This definition presents considerable evolution since EMCDDA's former exclusive focus on young people's drug use in a 'nightlife' context. This also translates to a tendency towards non-problematic drug use, a scenario in which partygoers' PAS use is seen to not significantly harm their global adjustment, as shown by recent studies of Portuguese partygoers [5].

Despite variability, qualitative research shows that specific meanings and motivations are evoked when partygoers report their experiences of PAS use at raves and trance parties. A number of recent studies [5-9] as well as more classic references [10] associate themes such as *spiritual growth, transcendence, potentiating insight, getting*

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in touch with one's inner world, potentiating creativity as reported intentions behind PAS use in recreational settings, especially in outdoor environments such as rave and trance scenes. However, the fact that these events potentially accommodate many visitors interested in experimenting with PAS, combined with the fact that some of them are likely to encounter some sort of difficulty during these experiences, cannot be neglected.

Taking these factors into consideration there is a strong case for the election of such scenarios as intervention priorities from the perspectives of selective and indicated prevention, as well as harm reduction and risk minimization (HRRM) [11, 12]. Intervention modalities based in proximity and informality are particularly important in these environments if we further consider that the user populations participating are not covered by any other program or service and are unreachable by conventional intervention protocols [11, 12].

The paper presents evaluation research that intends to transform Kosmicare (KC) - a project that develops crisis intervention in situations related to the use of PAS at Boom Festival (Portugal) - into an evidence-based intervention model. The project relies on intervention principles drawn from HRRM practice, crisis intervention models [13], and Stanislav Grof's psychedelic psychotherapy approach, particularly his conceptualization of crisis intervention in situations related to unsupervised use of psychedelics [14]. The approach intends to help reduce risks related to the use of PAS and development of mental illness, but also to impact target populations' views of themselves, their relationship to PAS use, and their relation to significant life events.

Other studies have reported emergency intervention results in recreational environments [15-19]. These reports focus, however, in medical crisis intervention aspects in raves and dance parties or in emergency departments attending recreational PAS use related episodes, with little or no feedback regarding protocol aimed at assisting psychological emergencies.

1.1. Crisis and Crisis Intervention Rationale

1.1.1. Crisis Intervention – General Aspects

Crisis intervention is a support therapy modality characterized by its short term action. Its main purpose is to offer quick resolution and relief of symptoms that will allow the subject to recover regular functioning in a short time-frame. This approach is particularly indicated for acute emergency situations [20-22]. It has gained popularity in the field of Community Intervention, where alternatives to traditional clinical services are often required [23, 24]. Although extensively used and researched for a number of intervention contexts and populations, no specific references were found that described using crisis intervention in relation to PAS use in nightlife and recreational environments. In the global field of addiction intervention, crisis intervention has been used in treatment contexts where the subject experiences a loss of control over PAS use behavior [25], but no references are made concerning implementation with recreational users.

1.1.2. PAS Use Induced Crisis

Intervention in crisis related to PAS use has been described as having the purpose of turning an unpleasant psychedelic experience into one that is as constructive and transformative as possible [26]. Abraham Maslow [27], referring to his definition of *peak experiences*, says that on some occasions in life an individual will transcend his/her own self, enter a state of complete harmony with his surroundings, and will achieve full self-actualization. In other words, *peak experiences* would allow the kind of satisfaction that could spiritually fulfill an individual, helping him/her become affectionate, creative, realistic, productive, and in tune with himself and others. According to Grof [14], appropriately conducted intervention in crisis related to the unsupervised use of psychedelics has the potential of resulting in an individuals' profound transformation in the sense anticipated by Maslow; on the other hand, if the approach is conducted by inexperienced staff, there is probability of serious psychological damage, such as severe psychotic conditions and years of psychiatric hospitalization.

There are several explanations for why such benefits are apparently possible. Psychoactives' chemical capacity to "open the mind" by releasing the central nervous system from operating under normal patterns of functioning has been referred for long [28]. Some factors and triggers related with benefits of the psychedelic experience have been highlighted by literature. Transpersonal psychologists present the environment surrounding the experience as the most determining factor, since it allows conscious resistance to be surpassed, and reality perception to be modified [29]. Vaughn describes her ability, under the influence of PAS, to focus her attention on what she chose; this resulted in a personal change that she claims made her more appreciative of music, art, nature and human relations – something that was achieved during her psychedelic experience that stayed with her long after [29].

There is a thin line, however, separating what could be an extremely positive experience from an overt crisis episode that unfolds with difficulty and unpredictable symptoms. Zinberg [34] argues that concepts such as *drug*, *set* and *setting* are fundamental for the understanding of PAS-related experiences. Drawing from Zinberg's contribution we have organized literature on crisis factors in three categories – *factors related to drugs*, *to set*, and *to setting*.

A number of factors that might trigger crisis are closely related to characteristics of the ingested substance and the immediate circumstances of ingestion (*drug*). Street substances have a high potential for adulteration and impurity, which can generate effects contrary to users' expectations. An inexperienced user might also be uncertain regarding quantities and dosage, which might result in fear or lowered ability to tolerate unpleasant effects [14]. Multiple drug use is an increasingly common and risky situation among adolescents and young adults, visible in recreational environments, in which varying quantities of psychoactives from very different pharmacological groups are ingested simultaneously. This leads to effects that are unpredictable both in form and duration [30].

Set has to do with the individual's psychological characteristics influencing his motivations, expectations and attitudes towards use. Specifically the users' personality, pre-existing mental health problems, past history of trauma, abuse and other life-events can be triggered and re-lived while under influence [31, 32] and are considered of extreme relevance. According to Stolaroff, while under influence, the degree to which the individual is able to accept the altered state will determine his/her ability to learn from emerging unconscious contents; on the other hand, resisting the effects might generate the kind of discomfort responsible, in more extreme situations, for psychotic outbursts [33].

Setting refers to the physical and social environment where the experience actually occurs, including factors such as place, company, and opportunity to share the unfolding experience [34]. If the individual is surrounded by a pleasant environment, in contact with nature, and in the company of an experienced user with whom the experience can be shared, these factors could provide the basis for an enriching and enlightening transpersonal state to unfold [33]. In fact, a large number of physical and social dimensions that compose the environment surrounding the experience are recognized as relevant factors as well. Frequently someone undergoing a crisis related to the use of PAS is also surrounded by extremely loud sound, dust, visual stimulation (e.g., radical self-expression), asymmetric temperatures, and bad resting conditions [35]; other social context dimensions that we have found to greatly interfere and negatively potentiate a using episode have to do with inappropriate, unfriendly or unsupportive companionship while under influence; the user being left alone; or simply having taken PAS inadvertently [31, 32, 35]. Several of these factors might appear associated with each other in a given situation; and more importantly, some of them might be responsible for crisis situations in the absence of PAS use [32]. This leads us to the conclusion that crisis intervention in recreational settings shouldn't be restricted to PAS use situations [35].

The definition of a *crisis episode* of any kind typically encompasses the consideration of three general dimensions [36]. The process starts with a precipitating event, corresponding to the moment a PAS is ingested. Secondly, the perception of the event arises, potentially in a hurtful way. This corresponds to the moment the first effects of the PAS arise and are perceived with fear, discomfort, or other negative emotions. When the therapist expresses empathy and encourages the person to verbalize his/her difficulties, showing an understanding of the situation and connecting to the person, this enables self-understanding and encourages acceptance of the process [37]. Finally, crisis can occur due to the lack of coping strategies to deal with the situation. The lack of coping strategies leads the individual into a state of fear, tension, confusion, discomfort and unbalance defined as *crisis* [13]. Because the person might not understand what is happening, significant subjective distress arises that potentiates the lack of coping. Empathy allows a decrease in anxiety, and facilitates the emergence of a less threatening perception of events [36].

Symptoms in crisis related to unsupervised PAS use are complex, diverse, and require careful evaluation. Crisis might include physical symptoms [38, 39]; consciousness,

alertness, attention and orientation alterations [38-40]; odor, texture, pain and sense of balance alterations [38]; temporal and spatial orientation might be compromised [39-42], as well as perception of time [14]; symptoms related to thought processes such as reasoning and judgment alterations, interference with decision-making and problem-solving [43], difficulty differentiating cause and effect [42], de-realization and depersonalization [43]; language alterations [14, 38, 43]; or symptoms related with the individual's emotional sphere (euphoria, a sense of peace, serenity, or pleasure, but also states of anxiety leading to a feeling of panic, sadness, crying, melancholy, apathy, and sometimes aggression [14]).

There is considerable discussion around the relation between PAS use and the emergence of psychiatric symptoms during crisis episodes. On the one hand there is the argument that the adverse effects of PAS are primarily related to subject's intrinsic characteristics (*set*), more than the products' pharmacological properties (*drug*). According to this perspective, the scenario in which symptoms related to a broad range of mental disorders appear during the sequence of PAS use is more likely to reflect pre-existing disorders rather than PAS effects, the co-occurrence probably being a coincidence [43]. On the other hand, a predominantly medically-focused approach emphasizes how PAS-induced altered states of consciousness appear to be responsible for the onset of mental disorders like DSM-V's [44] diagnosis of *substance use disorders* and the particular case of *Hallucinogen Persisting Perception Disorder* [44].

This debate is also developed by psychiatric comorbidity research. If on the one hand it is assumed that PAS-users might present increased incidence of psychiatric comorbidity [45, 46], on the other hand, comorbidity research still fails to provide an understanding of the underlying causality in the relation between PAS use and mental disorder onset, with no definitive answer presented as to whether disorders pre-exist or are consequent to PAS use [47].

Crisis might occur over the life of any individual and should therefore be understood as a normative developmental process [36]. The same understanding can be brought to what concerns crisis connected with the unsupervised use of PAS – so, similarly, intervention will develop efforts to help the individual reestablish coping and control and, if possible, end the process with an expanded view of the problem, himself and his/her relationships [14, 37].

1.1.3. Crisis Intervention Principles

Regardless of the severity of symptoms presented, crisis intervention should follow a number of principles [14, 48] oriented towards transforming what is being experienced as an unpleasant, uncomfortable or even a terrifying experience into a positive and possibly transformative one. Following good practice recommendations in this field [14, 49, 50, 51] we have considered these intervention principles:

Assessment of physical safety and information collection, such has PAS used, quantities, ingestion time, description of the person's condition and symptoms observed before assistance was provided.

Offer a safe, supportive and comfortable care space, considering physical variables, as well as social ones. A care

space should include an area where sound is more controlled, where there is warmth if needed, and privacy is kept from outside observation. Basic needs are addressed, such as comfort, hydration, nutrition and refrigeration. Individuals are expected to improve just on the provision of a place to rest and obtain some of the resources at the most basic level of Maslow's Hierarchy of Needs [27].

Facilitation means offering the presence of a supportive professional (or even someone close to the person, supported by a professional), with whom a trusting relationship can be established. This is perhaps one of the most decisive intervention aspects. Given the circumstances surrounding crisis intervention in the field, trust and cooperation between the person and the facilitator has to be established in a short period of time, and sometimes under demanding circumstances. Empathy, ability to keep focus, and intimate knowledge of altered states are strategies that guarantee the generation of trust. During this contact, the facilitator should use an approach that invites the individual to *talk through* the experience, instead of *talking down* [51]. It is important to emphasize that the experience will eventually end, and offer assistance to integrate possible traumatic content emerging from the crisis episode once it is over. This happens through a process in which the person is invited to turn once more to the experience, and is encouraged to deal with the critical events brought to surface. For this process to occur it is fundamental to let the experience unfold, for *e.g.* using music [14]. For this reason, the use of prescribed pharmaceuticals such as benzodiazepines or other neural-depressants is discouraged in crisis intervention, since it is understood that they prevent the individual from dealing with emerging conflict, contributing to an increase of psychosomatic and chronic emotional problems after the episode [14]. This approach is based on the assumption that "a bad experience isn't necessarily a negative one" [14].

Ensure safety. Intervention must ensure the individual is safe from hurting himself or others [14]. A speech focused on messages such as "keep calm" or the attempt to convince the person that "everything is okay" is highly discouraged, since these might increase the subject's distress. Questioning, especially if repeated and confusing, is also counter indicated, since it might reflect the facilitator's anxiety or apprehension about the situation.

Dass-Brailsford has highlighted that besides professional help, a person's reactions after a crisis episode are highly dependent not only on personal characteristics, but also on the event itself and the surrounding context [52]. *Integration*, or the moment when the person will search for a meaning for the experience [53], is more likely to occur in contact with those who are able to recognize and identify change that was put in motion after trauma [53]. In other words, *insight* regarding the crisis episode and change occurring after trauma are processes that lead to *integration of the experience*. In this sense the adherence to intervention principles above has a strong potential to influence crisis context, facilitate recognition and identification of change (trigger *insight*), and promote *integration*, thus determining crisis resolution.

Promote health and globally reduce risk. As defined by HRRM model, this principle requires a naturalistic approach to intervention and proximity to intervention targets. Unlike

crisis intervention, HRRM has been extensively implemented in nightlife and recreational settings [54-57]. The intervention model and its strategies pursue principles of *pragmatism*, *humanism* and *proximity* [58, 59]. These interventions aim to replace high risk behaviors with others that have the potential to drastically reduce negative aspects of PAS use [12, 60]. This approach is relevant regardless of the specific PAS being considered, since knowledge of PAS use consequences is considered useful starting from the very first experience [60, 61]. *Proximity* and *pragmatism* are also fundamental to ensure that intervention takes place in the environments in which the phenomena are occurring, since target-populations involved are frequently absent from other more conventional intervention settings [8, 62].

1.2. The Kosmicare (KC) Intervention Model

KC¹ was first implemented in 2002 at Boom Festival. Boom is a biennial independent artistic expression multidisciplinary cultural event that involved around 25 000 participants from over 102 countries in 2012. The program includes a strong artistic component, technology, and promotion of contact with nature. It has been awarded a number of times for its ambitious environmental program, and operates outside mainstream marketing circuits and branding (it is a *no-logo area*). The Festival's public reflects this diversity and dimension, largely surpassing the scope of electronic music, psychedelic community and psychedelic subculture, even though the presence of these expressions is relevant. The festival is characterized for pursuing values like humanism, sustainability and equality, and is famous for the investment put into care of partygoers. KC was assumed as festival production's responsibility, following needs identified in the field. KC is understood as a strategy to deal with multiple levels of risk associated with PAS use. At KC, partygoers can find a range of services that include HRRM (information and outreach, chill-out, drug use paraphernalia, testing) and also a care space especially designed for people undergoing difficult psychedelic and emotional experiences [26, 31, 35, 41]².

It has the main purpose of offering care and support to people undergoing a crisis episode related to PAS use particularly psychedelics, allowing their experience to unfold in a safe environment and be adequately integrated. Intervention intends to reduce the risk for mental disorders related to PAS use and to enhance possible benefits that emerge from this experience. The project therefore attempts to reduce harm related to PAS use, while respecting the individual's choice and personal responsibility towards this behavior. Prevention of abuse and drug dependency is also generally intended.

These goals go hand-in-hand with current definitions of health promotion, according to which preventive and promotion interventions should aim at reducing impact and

¹Initially *Ground Central Station*, and later on *Cosmikiva*, implemented with the support of MAPS – the Multidisciplinary Association for Psychedelic Studies – an organization contracted by Boom organizers to provide care for visitors during early incarnations of the festival.

²This is achieved every edition through a number of partnerships and services offered by some of the worlds most renowned and qualified agencies, such as MAPS/USA, Erowid.org, Energy Control/Spain, TED1/EU, APDES/Portugal, among other agencies.

exposure to risk factors for the development of mental, emotional and behavioral disorders; and also to strengthen protective factors in individuals, families and communities that might increase health and well-being, and thus diminish the likelihood that problems arise [63].

For this purpose a care space was created on the Festival premises following the principles described above. It included a main area where most situations were assisted, and an additional area for situations that required isolation due to their serious clinical presentation [35, 41]. Another area, located next to the Festival's main dance floor, offered basic HRRM strategies such as outreach and information, distribution of PAS use paraphernalia and other HRRM materials, and testing of PAS including identification of adulterants (thin-layer chromatography)³.

The project was implemented by a team composed mostly of volunteer staff. Recruitment emphasized expertise and knowledge of crisis situations. Team members were also experienced with participation in nightlife and recreational environments, and in establishing contact with its publics. The team received on-site training prior to intervention, and online training and guidance in the months before intervention. The team was composed of coordinators (pilot, co-pilot), team leaders (more experienced therapists coordinating a number of sitters), sitters (psychologists and other therapists), a medical team (nurse, psychiatrist and homoeopath), secretaries (who assist the running of space and keep track of Visitors for clinical and research purposes), and a number of consultants. In addition, the HRRM team included over twenty people of several nationalities. All together these staff members count for a total of around seventy people.

In 2010 we began to develop evaluation research that allowed us to describe and receive feedback on the intervention process, to examine the efficacy of the intervention, and to further describe the target population and contribute to the understanding of crisis symptoms triggered by modified states of consciousness. We wanted to know, specifically, if KC intervention was efficacious in reducing the number of crisis symptoms among the various groups of visitors. After the first results of visitors' feedback (short-term) were analyzed, we raised the possibility that intervention could be benefiting them further than simply providing a satisfying resolution to their crisis episode. For this reason another research objective emerged: to understand what long-term consequences of crisis intervention might emerge, according to visitors' views of the positive and negative aspects of the project. For the purpose of research we initiated an innovative partnership in 2010, including a University and a Governmental Agency⁴ that, alongside with Festival Production, offered basic minimum resources for research about HRRM, crisis intervention and mental health promotion associated with risk in PAS use in recreational environments. For evaluation research, all festival attendants were considered potential intervention targets. Situations related to PAS use were given priority, without disregarding the importance of care in the event of non-PAS

use-related crises. Visitors arrived at the care space either following directions or transported by Festival staff cooperating with KC, including paramedics and fire-fighters. The coordination team was available to cover the festival area with a vehicle to pick up people who required transport. KC Visitors were also being brought by friends or arrived on their own. On arrival, situations were evaluated by the *team leader*, who collected basic information and assigned a *sitter*. Intervention covered all Festival days, twenty-four hours a day. Teams were organized in pre-scheduled shifts that ensured this coverage. It was the *team leaders'* responsibility to coordinate the functioning of shifts and the team of *sitters*. They supervised all interventions taking place, provided guidance, coordinated shift turnovers and ensured information was passed to the next scheduled team.

The *sitters* were a group of experienced and trained peers responsible for individual intervention, selected for their skills in active listening, intuition, their knowledge of PAS and associated effects, and their ability to establish empathy with intervention targets. Sitters were also recruited according to their language skills, in order to guarantee that a wide range of languages be available in the team. Each team was assigned a *secretary* who offered logistical support, facilitated the passage of information on clinical status of intervention targets, collected information for research, and monitored arrivals and releases.

During intervention it was important to maintain cooperation between production staff, medical staff and security, in order to provide each situation with the best possible diagnosis and resolution. Partnerships with entities outside the Festival were also important. Entities such as the local addiction treatment center and general hospital were also contacted promptly when their resources were considered necessary for a small number of cases, involving heroin addiction or mental illness that required transfer to another facility. However, such transfer was considered a last resort. When a person is transported in an ambulance this generates an atmosphere of danger and emergency that can contribute to aggravating the crisis episode [14].

The general purpose of evaluation research is to transform KC into an evidence-based intervention model that can be disseminated to similar settings and populations. Over the past two editions (2010 and 2012) several studies were developed that contributed to this objective. Specifically, we have developed a number of instruments and identified qualitative and quantitative indicators that set the basis of KC's evaluation research. One of our main goals was to describe the intervention process. This goal considered the fact that the project had been taking place during earlier incarnations of the festival with little formal knowledge around methods or results being produced. For this purpose a number of reports were extracted, aimed at consolidating knowledge of our target-population and intervention process, with instruments thoroughly describing all intervention stages from admission, intervention, departure and follow-up [35, 64].

METHOD

According to the Society for Prevention Research efficacious interventions will have been tested in at least two

³These interventions were offered by Portuguese HRRM Team Check!N and Spanish HRRM Team Energy Control Barcelona.

⁴The Faculty of Education and Psychology – Catholic University of Portugal and the Portuguese General-Directorate for Intervention on Addictive Behaviors and Dependencies.

rigorous trials that (1) involve defined samples from defined populations, (2) use psychometrically sound measures and data collection procedures, (3) analyze their data with rigorous statistical approaches, (4) show consistent positive effects (without serious iatrogenic effects) and (5) report at least one significant long-term follow-up [65]. A pretest-posttest design, with a twelve-month to two-year follow-up, without a control group, was used in this study. We will review methodological aspects of research contributing to the purpose of transforming the program into an evidence-based intervention model.

The study design was inspired by program evaluation methodology [66, 67]. According to this approach, procedures for evaluating intervention programs should answer to a number of process and outcome indicators. The primary purpose of process evaluation is “(to) determine the extent to which the program is operating as planned (...) facilitating improvement by identifying problem areas that may require adaptation of program standards or operations, and by highlighting program elements that are being effectively implemented.” [68]. Process evaluation analyzes project implementation and participants' reactions to the program, describing how intervention unfolded, if the intervention design was appropriate, and whether the target group was effectively integrated. Additionally, it takes into account the issue of quality, gathering information relevant to the appraisal of effectiveness and the introduction of future improvements [68]. Outcome evaluation includes a number of indicators aimed at understanding to what degree the intervention produced the expected results. It examines the effects of intervention by determining to what extent goals have been attained, and is considered an essential instrument to determine whether intervention should be kept, adapted or abandoned [68].

Data on process and outcome evaluation can be gathered through the collection of quantitative or qualitative

indicators [66, 67]. We used a mixed methods approach that enabled “the collection or analysis of both quantitative and qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority and involve the integration of the data at one or more stages in the process of research” [69]. According to literature, approaches to typologies of mixed methods research designs have mostly drawn from evaluation, as well as from a number of other disciplines [70].

Table 1 presents the global research project design. To address the research objectives, quantitative data were analyzed with PASW 18 software. QSR NVIVO 9 software was used for qualitative data analysis. A number of factors account for differences in sample sizes for the different measurements. These globally refer to the challenges inherent to a naturalistic unconventional intervention and research setting that rose difficulties to the implementation of experimental design criteria and to the exhaustive monitoring of all cases attended. A number of cases unrelated to crisis are probably unaccounted for from our global research sample from 2010 (n=122). Difficulties accessing participants for follow-up purposes were also found. These arise from the fact that many visitors are unavailable for feedback immediately after intervention and also from the fact that intervention made efforts to minimize the burden put into visitors for research purposes. Sample size differences for different measurements pose limitations to data interpretation that must be acknowledged.

2.1. Participants

All festival participants were considered eligible for intervention and evaluation research. Considering Boom Festival has an estimate of twenty thousand participants per edition, this means that for the KC 2010 edition the project

Table 1. Evaluation research design.

General Objectives	Specific Objectives	Indicators	Year	Sample
Level 1. To characterize intervention model and implementation process	Characterization of participants	PAS use patterns characterization	2010	n = 122
		PAS associated symptoms		n = 107
		Symptomatology per gender		n = 83
		Symptomatology per age		
	Characterization of Intervention Implementation	Symptomatology per number of previous occasions ate festival		
		N° interventions/day	2010	n = 123
		Duration of intervention/hours (permanence)		n = 122
Description of team perception on intervention outcomes and impact	Team's perception about the results and impact of the intervention	Intervention strategies		n = 107
			2010	n = 36
Level 2. To characterize intervention outcomes	Evaluation of intervention outcomes	Mental state before and after the intervention	2010	n = 83
		Symptom evolution during different intervention stages		n = 107
		Intervention Resolution	2010	n = 107
	Participants' perception on intervention outcomes and impact	Visitors perception in the end of the intervention	2010	n = 54
		Visitors perception in the follow-up	2010 & 2012	n = 18

attended approximately 0,6% of all festival goers (n=122). Kosmicare intervention group (Sample 1) included male and female visitors from a wide age range and from very diverse nationalities, consistent with the Festival's participant profile. The sample included the total of situations attended, that corresponded to a range of distinguishable requests and needs, organized in a typology of situations for research and intervention purposes. Priority was given to crisis situations involving PAS use, and to mental health outburst episodes whether these involved PAS use or not. Whenever possible, KC also offered support to situations of personal crisis unrelated to PAS use and to situations unrelated to crisis at all, such as requests for a resting period, hydration, nutrition, medication and minor health care, etc. Children could also be attended for this purpose, if accompanied by their parents. But the team wasn't prepared for other therapeutic interventions involving these targets.

We estimate that a small proportion of situations attended at KC might be missing from our global 2010 research sample (n=122), since guaranteeing exhaustive monitoring of all cases is a challenging process at a non-clinical, naturalistic and unconventional intervention setting such as ours. However, we anticipate unaccounted interventions are more likely to correspond to situations unrelated to crisis.

Sample 2 includes a group of n=36 team members from the 2010 edition. These were the team members that participated in crisis intervention, composed in total by n=50 elements. This means our evaluation sample considers the feedback of approximately 70% of all KC 2010 Edition staff.

Sample 3 refers to a group of n=18 visitors gathered among KC 2010 (n=7) and 2012 (n=11) editions of the festival editions. These participants were recruited among those that offered their e-mails for posterior contact at the end of intervention, before leaving KC. At the 2010 edition n=58 participants offered final feedback when leaving KC, and n=44 visitors also offered their e-mails; at the 2012 edition n=77 visitors were available for posterior contact. From a total of n=121 e-mail contacts from both editions available, the final sample composed of n=18 participants corresponds to a very low return rate.

There are a number of reasons that can be pointed out to justify difficulties accessing participants for follow-up purposes. Offering feedback and availability for a future contact is a difficult request to attend for after having just finished integrating a crisis experience. Although some participants were receptive to our request, most of them were evidently unavailable and uncooperative, still presenting difficulty to write, being in a hurry to leave the intervention area, among other reasons. This uncooperativeness with research, specifically follow-up, was always respected, since we placed visitors' needs above research interests. The fact that we approached those initially available through email contact after a considerable period of time had elapsed also raises additional challenges to sampling for follow-up purposes. Given this scenario, it is evident that data concerning follow-up must be considered exploratory and require further research. Nevertheless, we consider our samples to represent a significant effort and contribution for research at a naturalistic setting that offers such a challenging intervention context.

2.2. Research Procedures

Data collection took place over three different moments. The first moment was during the KC 2010. Data were gathered through sitters and secretaries' feedback regarding the situations attended (n=122), and through feedback offered directly by visitors at the moment they left KC. At this stage we intended to gather information concerning satisfaction with intervention. For this purpose, a secretary approached the visitor on departure from KC requesting for feedback. Difficulties concerning intervention setting and visitors' frequent unavailability to offer feedback immediately after intervention account for the fact that visitor final feedback concerns a much smaller sample of n=58 participants.

A second moment, regarding intervention team feedback, occurred a month after implementation (form 5). Intervention team feedback was collected using a number of quantitative indicators about teams' perceptions of KC efficacy and satisfaction with the project, as well as SWOT analysis followed by content analysis.

A third moment concerns visitor follow-up feedback. A total of n=18 visitors from 2010 and 2012 were approached for follow-up purposes *via* e-mail, requesting collaboration to answer an online questionnaire. Given the difficulties in obtaining access to a follow-up sample we decided to include visitors from both editions, since intervention model, team structure, intervention stages and procedures were implemented in both editions according to the same principles, project structure, context and intervention strategies. Visitors from the 2010 edition were approached after eighteen months had passed since intervention. For visitors from the 2012 edition this period was of six months.

2.3. Measurements

Flay *et al.* [65] refer to the importance of using psychometrically sound measures and data collection procedures in prevention research. These measures and procedures should refer to the intervention description (process evaluation) in a way that allows others to replicate it; and also include statements of measurable behavioral outcomes of intervention.

A number of measurements were collected over several intervention stages.

Instruments were predominantly designed to collect information based on sitters' and secretaries' reports about visitors' condition. In addition to the time contingency of the KC project (taking place solely during the biannually occurring Boom Festival), the short time between intervention implementation and research project presentation and approval made it impossible to do pilot-tests on our research instruments.

Table 2 presents research forms according to types of data collected and data collection moment.

First moment. During implementation, secretaries would approach sitters requesting information. Data collection of forms 0, 1, 2 and 4 relied on sitter feedback, supported by that of secretaries. Data was collected during intervention

Table 2. Assessment protocol.

Forms	Type of Data Collected/Dimensions	Data Collection Moment
Form 0 VL	Numeric Registration of Visitors Arrival; day; time; shift; sitter Departure: day; time; shift; sitter	Visitor Arrival/ Departure
Form 1 VRA	Visitor Demographics Arrival at KC (brought by); Psychoactive Substance Use (PAS)	Visitor Arrival
Form 2 MSEC	1. Appearance, attitude and awareness of personal condition; 2. Psychomotor Behavior; 3. Conscience, Alertness, Attention and Orientation; 4. Language and Speech; 5. Thought Processes; 6. Self Consciousness; 7. Affect and Emotions; 8. Physiological Functions	1st - Visitor Arrival 2nd – Visitor departure (Pre and post intervention)
Form 3 IF	Condition on arrival Description of interventions that occurred (Therapeutic strategies used with t visitor: psychological -sitter; medical - medical team; social – social worker) Effects observed /conditions of departure (description of visitor's current psychological and physical condition)	During all intervention stages
Form 4 VFFIC	Satisfaction about KC intervention Informed Consent to use personal data in research	Visitor Departure
Form 5 SFF	Staff's Experience in KC Perception on KC's functioning Opinion of: Self-participation on KC KC Training KC Team Work Conditions Boom Organization Harm Reduction Team KC Implementation	One month after Intervention
Form 6 VFFFU	Visitor Demographics Outcomes from the intervention evaluation Characterization of crisis episodes	Six to eighteen months after intervention

Note. VL = Visitor List. VRA = Visitor Report Arrival. MSEC = Mental State Exam Checklist. IF = Intervention Form. VFFIC = Visitor Feedback Form & Informed Consent. SFF = Staff Feedback Form. VFFFU = Visitor Feedback Form Follow-up. KC = Kosmicare.

and covered the period from arrival to departure. On arrival, Visitors were welcomed by a sitter and assigned an individual or open area in KC. At this stage Forms 0, 1, and 2 (MSEC on arrival) were collected. During intervention the sitter would fill out Form 3, with a review of the overall interventions that took place, and observed effects. On visitor departure, the sitter would fill in Form 2 (mental state on departure), and Form 3 (condition when leaving KC).

Form 2 (MSEC) was specially designed with the purpose of obtaining a quantitative indicator of crisis resolution. A number of instruments for mental state evaluation are available for altered states of consciousness related to the use of PAS, such as the APZ - *Abnormal Mental States* [71, 72]; its' improved version, the OAV - *Altered States of*

Consciousness Rating Scale [73]; or the 5D-ASC - *Five Dimensions of Altered States Questionnaire* [74]. These instruments represent valuable and reliable alternatives for the study of altered states of consciousness. However, both the OAV as the 5D-ASC are lengthy instruments that rely on self-reported administration, making them unsuitable for our research setting and participant profile. The Mini-Mental State Exam [75] was also considered unsuitable, since we intended to assess a wider range of mental state dimensions. Although conceived for the evaluation of mental state alterations during crisis resulting from the use of PAS, the MSEC also prove its ability to identify symptoms potentially connected to other diagnoses. It does not require self-administration, relying on an observer's evaluation of the presence of the symptoms on a dichotomous scale checklist. In 2012 we developed the first studies of the instruments'

psychometric properties with results pointing to high levels of internal consistency in all dimensions of mental state exam, suggesting the MSEC's high reliability [69]. The instrument's psychometric studies are, however, still in progress, and these results require further research.

Second moment. One month after KC implementation, the team was approached *via* e-mail and asked to contribute to a questionnaire sent *via* e-mail. (Form 5).

Third moment. Form 6 was collected during a follow-up period of 18 to 6 months after intervention. Data was collected using an online questionnaire developed through Google Drive – Forms.

Efforts were made to minimize the burden put on visitors for data collection purposes, considering the serious condition in which they could arrive at the space, anticipated paranoia symptoms, difficulties with language and verbal processing of information and experience, and hurry in leaving the space following crisis resolution. These are the reasons underlying difficulties in our research design, namely concerning the differences in sample sizes for the various research groups.

3. RESULTS

3.1. Intervention Model and Implementation Process

3.1.1. Participants and Crisis Characterization

Table 3 summarizes information about participants from three research samples (n=176).

Research participants were predominantly males, aged 19-39, European, and highly qualified. However, demographics on Sample 1 are limited. During intervention it is important interviewing concerning visitors' background is kept to a minimum. This fact raises difficulties to our intention of presenting rigorous demographics of KC visitors.

The reasons why visitors attended KC were categorized according to different possibilities. Some visitors attended due to *a difficult experience involving PAS use* (T1). This type of situation could happen due to intentional or non-intentional use. We considered non intentional use occurred when a visitor reported being offered a designated PAS that turned out to be a different product, when use occurred without previous consent, or when use occurred accidentally (drinking from an abandoned bottle of water that contained a PAS). This type of situation was responsible for the majority of interventions performed at KC. Another type of situations was a *personal crisis not involving PAS use* (T2). Relational problems with significant others, being lost, disoriented, overheated, tired, overwhelmed by the highly stimulating environment of the festival, among other factors, might trigger emotional responses and distress that could also be integrated through intervention offered at KC. We considered T2 situations involved these triggers in the absence of references to PAS use, although complete absence of PAS use couldn't in fact be demonstrated. *Non-crisis* (T3) were situations not related to a crisis episode that had to do with requests for a rest area, information or minor healthcare requests (a bandage, a pregnancy test, HRRM materials, *etc.*), in the absence of distress. These situations

were probably the ones less accurately accounted for in Sample 1 (n=122), since they presented less severely and required less time and effort to be solved. There were also situations in which visitors presented *mental crisis involving PAS use* (T4) and situations in which the *mental crisis was not involving PAS use* (T5). Both these scenarios required the presence of psychopathological symptoms like psychotic outbursts, paranoia, depression, that raised the possibility of a diagnosis prior to festival participation or PAS use. An important criterion for assigning this category was the fact that after a considerable amount of time had elapsed, symptoms showed no alteration. These were also the situations where intervention was more likely to include prescribed pharmaceuticals.

The different types of situations attended demonstrate the project covered a wide range of needs, surpassing its main focus on difficult experiences involving PAS use. This is suggestive of a more diverse intervention field than initially expected, since implementation signaled new needs requiring the formulation of additional goals in future editions and intervention designs. It is also supportive of the need for a broader, multi-leveled definition of crisis and crisis intervention, in what concerns recreational environments.

Results concerning the number of PAS used by KC visitors from Sample 1 and Sample 3 are suggestive of frequent poly drug use, since large percentages of both samples report having used 2 or more substances. However, results also point out to cases when no PAS were used, once more supportive of the need for broader crisis definitions in recreational environments.

Table 4 presents descriptive frequency data concerning use of different PAS. For this purpose we used a measure based in self-reported use – that is, visitors reported the substances they believed they had ingested. Consequently, this influences feedback concerning the PAS visitors perceive as responsible for unpleasant, crisis triggering effects. Differences between self-reported use and products actually ingested represent a common bias also present, for example, in epidemiological research. However, implications for our intervention context are particularly relevant since PAS circulating in recreational environments frequently include adulterants and/or other products not announced by sellers, unknown to users, not accounted for in self-reported use, and potentially responsible for unpleasant effects and crisis. This scenario is undoubtedly present at our data, since we cannot accurately say if LSD and MDMA are in fact responsible for such high use prevalence and crisis symptoms among KC visitors.

Because cannabis is less frequently associated with unpleasant effects and crisis symptoms in users' perceptions, it is possible our data under-reports its prevalence and its influence over crisis symptoms.

When poly drug use occurred, the most frequent combinations were of LSD and alcohol (12%), as well as MDMA and Cannabis (10%). Other less frequent combinations were amphetamines and alcohol (7%), and LSD and MDMA (8%). These data indicate that LSD, Alcohol and Cannabis are the most frequent SPA present in poly drug use patterns among KC visitors.

Table 3. Research samples.

Demographics	Totals		Sample 1		Sample 2		Sample 3		
	Total (N=176)	n	%	122	%	36	%	18	%
FESTIVAL EDITION									
2010	165		93,8%	122	100%	36	76%	7	38%
2012	11		6,3%					11	61%
Missing									
Valid N	176			122		36		18	
AGE									
≤18	4		2,5%	4	3,28%				
19-29	108		68,8%	77	63,1%	20	56,25%	12	66,6%
30-39	31		19,7%	19	16%	5	12,5%	6	33,3%
≥40	14		8,9%	3	2,5%	11	30,5%		
Missing	19			19					
Valid N	157			103		36		18	
SEX			69,9%						
Males	123			82	67,7%	30	83,5%	11	61,1%
Females	53		30,11%	40	32,2%	6	16,5%	7	39%
Missing									
Valid N	176			122		36		18	
ORIGIN									
European	124		85%	83	90,2%	28	77,7%	13	72,2%
Other	22		15%	9	9,8%	8	22,2%	5	27,7%
Missing	30			30					
Valid N	146			92		36		18	
QUALIFICATION									
Secondary	7		13,2%			3	8,3%	4	23,5%
Graduate	39		73,6%			27	75%	12	70,6%
Post-Graduate	7		13,3%			6	16,6%	1	5,9%
Missing	123			122				1	
Valid N	53			0		36		17	
OCCUPATION									
Psychol/therap/psychotherap	47		65,3%			25	68,8%	4	22,2%
Medical profession	9		12,5%			9	25%		
Academic	2		2,8%			2	6,3%		
Other Payed Occupations	5		6,9%					5	27,7%
Students	6		8,3%					6	33,3%
Unemployed	3		4,1%					3	16,6%
Missing	104			122					
Valid N	72			0		36		18	
TYPE OF CRISIS									
T1	87		69%	80	74%			7	38,9%
T2	3		2,4%	2	1,9%			1	5,6%
T3	17		13,4%	12	11,1%			5	27,8%
T4	12		9,5%	8	7,4%			4	22,2%
T5	6		4,8%	6	5,6%				
T6	1		0,8%					1	5,6%
Missing	50			14					
Valid N	126			108		(NA)		18	
NUMBER OF PAS									
0 PAS	12		9%	12	10,3%				
1 PAS	67		51%	57	49,1%			10	71%
2 or more	51		39%	47	40,5%			4	29%
Missing	10			6				4	
Valid N	130			116		(NA)		14	

Note. T1 = A difficult experience involving PAS use. T2 = A personal crisis not involving PAS use. T3 = Non-crisis. T4 = Mental crisis involving PAS use. T5 = Mental crisis not involving PAS use. T6 = Doesn't know. NA = Not applicable.

Sample 3 (n=18) that integrates data from our exploratory follow-up study, follows a similar tendency in terms of PAS use. An exception to this is an important frequency of 2CB in Sample 3, when 2CB use in Sample 1 assumes lower comparative frequency.

Analysis of symptoms according to gender (Table 5) shows a predominance of crisis symptoms in male visitors,

resulting from mean comparison at the pre-test samples, and mean difference being marginally significant. Data concerning symptoms collected through the MSEC were collected next to n=83 participants. This means outcome data are missing for a total of n=39 participants. A number of factors related to unexpected circumstances that arise in naturalistic field intervention cause problems to experimental

Table 4. Frequency of self reported psychoactive substance use.

PAS	Totals		Sample 1		Sample 2		Sample 3		
	Total (N=176)	N	%	122	%	36	%	18	%
LSD	72	53%	68					4	29%
MDMA	27	19%	58%	20%				3	21%
Amph	19	14%	24	14%				2	14%
Ket	7	5%	17	6%					
Coc	7	5%	7	6%					
Cann	17	12,5%	7	13%				1	7%
2CB	7	5%	5	4%				2	14%
Mushr	2	1%	2	2%					
Alc	26	19%	24	20%				2	14%
Other	1	0,7%	1	0,8%					
Missing	4							4	
Valid N	136		122			(NA)		14	

Note. Amph = Amphetamines. Ket = Ketamine. Coc = Cocaine. Cann = Cannabis. Mushr = Mushrooms. Alc = Alcohol. NA = not applicable. Other = DMT, DOC, opium, methadone, proscaline, GHB and zopidone.

clinical design requirements, and are responsible for this loss of study participants.

Table 5. Mean comparison of pre-test symptoms according to gender (p<0.10) at Sample 1.

Symptoms (Pre-Test)			
Total (N=122)	N	Mean	SD
Male	58	9,17	(9,47)
Female	25	6,20	(4,86)
Missing	39		
Valid N	83		
t (78,72)	-1,89†		

Note. SD = standard deviation.

Analysis of symptoms per PAS according to sitter’s perception (Table 6) showed that affect and emotion-related symptoms were the most frequent category induced by all PAS. These included symptoms such as anxiety, fear, suicidal ideation, and crying. Visitors using LSD and MDMA presented a larger number of symptoms, allowing us to assume these were the PAS visitors reported were related to more crisis symptoms. Besides affect and emotion-related

alterations other common symptoms included alterations in consciousness, alertness, attention and orientation, such as confusion and disorientation; thought process alterations included paranoia; and physiological function alterations included sweating, sleep deprivation, vomiting and/or nausea, fatigue, pain, dehydration, malnutrition, insomnia and fatigue.

Alcohol use showed relation to affect and emotion alterations such as aggression, suicidal ideation, expressions of low self-esteem, fear, emotional lability, affective incontinence, anxiety, and euphoria. Visitors presenting amphetamine use also presented affect and emotion alterations such as anxiety, and thought-content alterations such as paranoia.

Besides affect and emotion alterations such as anxiety and fear, cannabis triggered consciousness, alertness, attention and orientation alterations such as confusion, unconsciousness, lethargy, and spatial, temporal and personal disorientation. Visitors that presented ketamine use mostly showed, besides affect and emotion alterations such as anxiety, fear and sadness, also physiological function alterations such as sleep deprivation and dehydration, and thought content alterations such as paranoia. Visitors presenting cocaine use presented affect and emotion

Table 6. Crisis Symptoms and PAS use.

PAS	Symptoms					
	Physiological Functions	Thought Content	Affect and Emotions	Conscience, Alertness, Attention, Orientation	Motor Activity	Thought Process
LSD (n=58)	31%	21%	71%	57%	-	-
Alcohol (n=23)	29%	17%	61%	29%	-	-
MDMA (n=22)	32%	36%	77%	14%	14%	14%
Amphetamine (n=17)	24%	47%	82%	-	18%	-
Cannabis (n=15)	27%	-	85%	33%	-	-
Ketamine (n=7)	29%	29%	86%	-	-	-
Cocaine (n=4)	-	-	100%	-	-	-

alterations exclusively, such as suicidal ideation, expressions of low self-esteem, anxiety, and fear.

A number of aspects limit interpretation of PAS use related symptoms in crisis. First, a large percentage of our Visitors presented poly drug use. Thus it is not possible to ensure these symptoms were determined by a single PAS. Second, visitors report the PAS they believe to have ingested. However, only testing of all ingested PAS could in fact guarantee rigorous conclusions in relation to PAS use and crisis symptoms, offering reliable feedback regarding the PAS visitors were in fact reacting to. Finally, and following our understanding of psychological crisis related to PAS use in recreational environments as a biopsychosocial response, we must acknowledge it is not only triggered by drug related factors, but also by set and setting factors.

3.1.2. Intervention Implementation Characterization

Analysis of crisis episode interventions in terms of their length allowed us to conclude that approximately 50% of all episodes attended to were solved within a 1- to 5-hour period. This means most situations were likely to be solved within a shift interval. 31% of episodes attended to could last the equivalent to a 2-shift period of time prior to discharge. A smaller proportion of situations took over 24 hours of intervention and up to several days (13%).

We also described intervention strategies used by sitters (Table 7).

Most strategies assumed the form of some kind of basic psychotherapeutic skill such as talk therapy. Talk therapy occurred when the Visitor was able to discuss issues or life events that the crisis episode brought up, and implies the use of active listening to enable insight and relief.

All therapeutic strategies being implemented followed a non-directive, holistic, accepting, and active-listening orientation. Intervention intended to establish a relationship based on support, care and the individual's needs. Specific strategies could vary according to each *sitter*/therapist's skills, while still guaranteeing adhesion to these general principles. Strategies and approaches included homeopathy, transpersonal psychology, *reiki*, and others. Physical contact through massage was considered useful once trust was established, except in situations presenting paranoia and related symptoms [41].

We emphasize logistical strategies' centrality such as offering a rest area, or providing warm clothes, since according to crisis intervention principles, offering a safe, supportive and comfortable space is considered fundamental [26, 31].

3.1.1. Team Satisfaction

To assess the degree to which team members considered the project to have achieved its goals, and their evaluation of project functioning (team satisfaction with KC implementation), each member responded to a number of items to express agreement or disagreement with a set of affirmations (e.g. "KC's implementation was high"). Team members were also asked to report on their perception of how Visitors received intervention, as well as their perceptions of the project's relevance and overall efficacy.

Team satisfaction with project implementation (Table 8) was positive, with close to 80% of responses expressing agreement or total agreement with the item *Project's degree of implementation was high*. Over 90% of respondents considered intervention to be very positively accepted by targets. Similar results were found regarding Team's perception of the relevance of intervention, and its ability to satisfy the needs of the target group.

Additional data gathered through SWOT Analysis and content analysis of Team feedback allowed us to understand that some of the strengths expressed about project efficacy included the perception that intervention provided high quality services and was extremely well received by targets. According to team members, "*Regardless of adversity, the work was done with impressive acceptance by the Visitors*" (TM25); "*For me, everyone who got to us was helped in a very secure way.*" (TM3); "*Kosmicare has developed a working model and ethos that is highly functional and gives great service to the festival and its participants*" (TM13).

SWOT analysis also expressed team members' concerns with project *location* and *safety*. In 2010 KC area was distanced from other festival areas, which made the project more vulnerable to punctual episodes involving theft and aggression - "*Being so isolated meant that Kosmicare received poor security support at times.*" (TM10); "*I felt a vibe of unrest due to lack of security staff in our area, as it alerted us about the possibility of risk situations while not having the conditions to deal with it.*" (TM34). This feedback gave way to the decision to move KC to more central Festival grounds, to supply the area with permanent security staff, and to improve communication with organizers, all of these being implemented in following editions.

3.2. Intervention Outcomes

Intervention outcomes were assessed through measurement of the Visitor's mental state upon admission and discharge (pre and post test). For this measurement we

Table 7. Crisis intervention strategies.

Psychotherapeutic Strategies		Complementary Strategies		Medical Strategies		Logistic Strategies	
Talk therapy	72%	Music therapy	13%	Nutrition	8%	Offering a resting space	27%
Sitting with quietly	28%	Massaging	11%	Hydration	8%	-	-
Walking with	13%	Homeopathy	10%	-	-	-	-
Physical contact	13%	-	-	-	-	-	-
Working with significant others	9%	-	-	-	-	-	-

Table 8. Team's satisfaction with project implementation.

KC Implementation (N=36)	Totally Disagree	Disagree	Agree	Totally Agree
<i>Project's degree of implementation was high.</i> (n=24)	8,3%	12,5%	66,7%	12,5%
<i>Visitor's acceptance of intervention was positive.</i> (n=33)	3%	3%	30,3%	63,6%
<i>KC was effective achieving its goals.</i> (n=31)	-	-	61,3%	38,7%
<i>KC is relevant.</i> (n=32)	-	-	18,2%	81,8%
<i>KC is able to satisfy intervention's needs</i> (n=31)	-	12,9%	71,0%	16,1%

used the MSEC [69, 70]. We also observed how crisis symptoms developed during intervention, and gathered data on visitors' satisfaction upon departure of KC and in a follow-up inquiry (twelve to eighteen months).

3.2.1. Symptoms and Mental State

The *IF (Form 3)* describes the development of crisis symptoms based on sitters' perception. This description occurred throughout intervention – *initial stage* refers to symptoms presented on arrival; *development stage* refers to symptoms presented during intervention; *final stage* refers to symptoms presented at the moment the Visitor left the space. Each crisis episode, however, could present differences in terms of length. This makes it impossible to quantify each stage's duration.

Table 9 shows that despite the increase in symptoms during the middle stage of intervention (for example in physiological functions, thought processes and thought content, affect and emotions) considerable resolution is achieved at final stages for all symptom categories. The increase during middle stages of intervention could be explained due to the fact some Visitors are brought shortly after the emergence of the crisis episode, which peaked while intervention was already taking place.

For pre- and post- values of mental state exam symptoms comparison we paired t-test of n=44 participants (Table 10) in order to ensure an equivalent number of participants at both samples, since no post-test data were available for approximately 50% of visitors.

Pre- and post-test comparisons showed significant differences in symptoms presented on these two occasions, with a mean difference of 6,84. This is a statistically significant difference ($p<.000$) confirming pre/post symptom differences that can be understood as indicating crisis

resolution. No differences among groups with and without post-test were explored, since our focus was on mean differences regarding symptoms.

Another indicator of crisis resolution resulted from our qualitative data. Using indicators included in *IF (Form 3)* we explored resolution regarding a valid sample of n=54 visitors, consisting of 44% of our intervention sample (N=122). 76% (n=41) of crisis episodes obtained resolution, 17% (n=9) crisis episodes were left unsolved, and 7% (n=4) crisis episodes intervention was interrupted before intervention was considered complete.

In order to understand characteristics of resolved and unresolved episodes we explored the relation between resolution and visitor behaviors in association with intervention strategies (Table 11).

Complementary, medical, logistical and psychotherapeutic strategies all contributed for crisis resolution. Additionally, large percentages of these participants also expressed behaviors indicative of well-being such as *smiling, being calm and relaxed, being stable, regaining consciousness, expressing feeling safe, falling asleep* among others. A number of collaborative behaviors such as *accepting medications* or *showing interest in intervention* were also presented. In smaller percentages of cases these strategies were unable to produce crisis resolution. This fact encourages, in our opinion, the need for diverse intervention strategies to achieve crisis resolution and the importance of the project's integrative approach.

In the context of resolution data we wanted to further understand the relation between type of crisis/episode and crisis resolution (Table 12). We explored the relation between type of crisis and resolution regarding a valid sample of n=54 visitors, consisting of 44% of our intervention sample (N=122).

Table 9. Symptom evolution during intervention.

Symptomatology	Evolution During Intervention		
	Initial Stage	Development Stage	Final Stage
Motor activity (n=11)	82%	73%	0%
Attention, awareness, alertness and orientation (n=26)	81%	73%	25%
Physiological functions (n=33)	61%	85%	6%
Thought Process, speech and language (n=10)	90%	100%	40%
Thought content (n=29)	76%	90%	10%
Affections and emotions (n=75)	85%	93%	9%

Table 10. Pre-post mental state evaluation results.

	Pre-Test (n=44) Mean (DP)	Post-Test (n=44) Mean (DP)	t (43)
Symptoms	8.89 (8.91)	2.05 (4.63)	5.48***

***p<.000.

Unresolved episodes were mostly associated with cases where Visitors presented a mental health outburst episode (*mental crisis*), whether related with PAS use or not. These two types of unresolved crisis account for 78% of all unresolved episodes.

3.2.2. Targets Satisfaction and Intervention Impact

3.2.2.1. Visitors’ Satisfaction on Departure

Outcome assessment also included measurements and qualitative data analysis regarding the satisfaction of the target group. Descriptive statistics showed that 81% (n=41) of 2010 Visitors that offered feedback at the moment they left KC (valid n=58) expressed total agreement towards the item “*I have been helped by KC*”. Satisfaction was also high in relation to project’s physical conditions (58% expressing total agreement); and in relation to technical human resources (75% expressing total agreement with the item “*KC staff was helpful, caring and available*”). Additionally, satisfaction was also expressed at the item “*KC had well-prepared efficient staff*”, with 80% visitors declaring total agreement with this item. This allowed us to conclude that Visitors’ satisfaction with KC implementation reached levels of excellence, which suggests that intervention was effective.

3.2.2.2. Long-Term Satisfaction

Long term satisfaction data and long-term impact of crisis intervention data bellow were collected for follow-up

purposes. These data present considerable limitations since they refer to a very small sample of participants (n=18) from two different project editions (2010 and 2012), approached after different periods of time had elapsed from intervention (twelve and eighteen months respectively), and no statistical data being offered considering 2012 intervention. These obstacles reflect, once more, difficulties with data collection that arise from our naturalistic intervention and research setting, as already stated above. Follow-up participant sample was gathered from a universe of N=322 KC visitors from 2010 (n=122) and 2012 (n=200) editions. A total of n=44 visitors from 2010 and n=77 visitors from 2012 left their e-mails for posterior contact at our request. But answer return rates were considerably lower, referring to n=7 visitors from 2010 and n=11 visitors from 2012.

Data shows that the vast majority (n=15) of Visitors who participated in the follow-up study (n=18) reported a positive perception of the intervention. This suggests our follow-up sample considered KC effective in solving the crisis episode. The fact that we were approaching these subjects after a considerably long period after intervention shows us that this perception was stable over time. We also wanted to know about intervention’s impact and relevance to Visitors’ lives. Data shows the majority (n=10) considered intervention a very significant experience in their lives. This shows respondents have been able to reflect upon the meaning of their crisis experience, a relevant last step in crisis resolution.

Finally, we wanted to understand which aspects of intervention were perceived positively and which negatively. We considered this evaluation to be central for the improvement of the intervention’s future implementations [71]. Visitors globally emphasize the centrality of psychotherapeutic intervention strategies used by sitters (“*People working at KC are so calm they give a sense of*

Table 11. Association between intervention strategies, intervention episodes resolution and visitor’s behaviors.

Intervention Strategies	Intervention Episodes Resolution			Visitors’ Behaviors	
	Solved n %	Unsolved n %	No Information n %	Well-being n %	Collaborative n %
Psychotherapeutic (n=90)	27 30%	8 9%	55 61%	30 33%	3 3%
Medical (n=18)	7 39%	2 11%	9 50%	7 39%	2 11%
Logistic (n=34)	12 35%	3 8%	19 57%	20 59%	1 3%
Complementary (n=32)	15 47%	4 13%	13 40%	18 56%	4 13%

Table 12. Resolution according to type of crisis/episode.

Type of Crisis (n = 54)	Intervention Episodes Resolution		
	Solved n=41	Unsolved (n=9)	Interrupted (n=4)
Difficult, intentional experience with a PAS (n=33)	82% (n=27)	6% (n=2)	12% (n=4)
Difficult, accidental experience with a PAS (n=1)	100% (n=1)	0	0
Mental crisis not related to PAS (n=4)	50% (n=2)	50% (n=2)	0
Mental crisis related to PAS (n=6)	17% (n=1)	83% (n=5)	0
Non crisis (n=10)	100% (n=10)	0	0

peace, harmony, a good energy that penetrates us and helps coming out of madness” V6). Specifically, we understood visitors referred to sitters’ empathy (n=6), availability (n=6), ability to calm them down (n=7) and talk therapy (n=4), as the most positive aspects. Empathy as a basic relational skill, defined as the ability to understand the experience of others while accepting them, was fundamental for encouraging the person to verbalize difficulties (“*I have met someone at KC who I felt understood what was wrong with me*” V4). Availability was defined as the ability to establish rapport for a considerable amount of time while crisis was developing (“*People that love to help and can stay for maybe hours by someone’s side*” V12). The ability to calm the visitor down was defined as the capacity to change crisis perception in ways resulting in the reestablishment of emotional balance (“*It was nice that someone talked to me and calmed me down*” V8).

On the other hand, the lack of medication to interrupt the crisis (n=1), shift changes that might present the need for the visitor to repeat information concerning their symptoms to a new sitter (n=1), and the spatial setup of the intervention not providing enough privacy (n=1), were signaled as the most negative aspects. However, frequency analysis shows considerably inferior results as far as negative aspects are concerned.

3.2.2.3. Long-Term Impact of Crisis Intervention

Follow-up assessment was developed with the aim of collecting data on Visitors’ perception of the long-term benefits of intervention, how long those benefits lasted, and current perceptions of the crisis experience.

Long-term impact of crisis intervention included a number of benefits perceived as enduring long after intervention occurred. Respondents reported a number of changes that occurred at a personal level, including changes in how they related to drug use. Specifically, they reported increased knowledge of how to deal with crisis situations (n=2), acquisition of a more responsible attitude towards drug use (n=5), and gaining a more positive appreciation of oneself and relationships with others (n=5). Acquiring a more responsible attitude towards drug use as a result of KC intervention was possible due to increased awareness of PAS effects and safer use practices (“*The benefits have been my mindset towards drugs and the effects of drugs on you. Where to use drugs and how to use them more responsibly.*” V15). Increased knowledge of how to deal with crisis situations implied a more informed and conscious attitude about PAS use-related risks, and the intention of managing these in the future to prevent crisis (“*I know better how to handle bad trips.*” V17). Increased positive appreciation for oneself and for relationships with significant others has been described as an opportunity presented by crisis, since healing and resolution of daily difficulties might be triggered by a psychedelic crisis episode [72] (“*This day I had a breakthrough in my relationship with my father. Not everything had been solved this night. It was more like the beginning of a wonderful process, which led me to the realization, that my parents always wanted the best for me and gave me all the love that they could give. With time I managed to look at my childhood from different perspectives and found peace with myself and my relationships*” V9).

We also wanted to understand Visitors’ perceptions of how long the benefits of intervention lasted. An expressive majority (n=12) reported their current perception as being that such benefits would have a definitive impact on their lives, further supporting the notion of crisis episode resolution as a meaningful experience with positive and lasting effects.

Finally we wanted to understand how crisis had been integrated over time. This data presented us with situations where integration was clearly positive, as well as cases where integration was negative. Negative integration situations had to do with an increase in symptomatology that had appeared prior to crisis (n=1) (“*I have had problems with social integration also before this experience, but after it’s worse to control the anxiety and panic*” V1); symptomatology that was triggered by the crisis episode (n=1) (“*My perception is also changed. I see things moving in the corner of my eyes that aren’t really moving...*” V14); and the wish not to have had the experience at all (n=2) (“*My life would have been better if I wouldn’t have had the trip and been forced to go there*” V7).

Several dimensions were indicative of positive integration. The willingness to repeat the experience (n=2) is shown by the emergence of increased insight about oneself, personal problems and daily situations, indicating that not only was the crisis episode positively solved, but it also triggered new skills about understanding oneself and others (“*I had this urge and need to find out what happened that day and why I went through what I went through*” V13). Other reported dimensions were an increase in self-knowledge (n=3) (“*It helps me to see more clearly circumstances and parts of this problem*” V5); the desire to search for a more positive experience (n=3) (“*What really bothers me, and the only negative aspect I still carry with me, is that I couldn’t experience a good, intense, fun, changing, interesting and positive LSD experience*” V10); and the expression of happiness (n=4) (“*I am actually quite happy that the incident happened because I now know about Kosmicare and can avail of it in the future*” V18).

Globally our follow-up sample can be clearly considered insufficient for effective feedback, is probably highly selective (respondents potentially being participants with more positive experiences to share) and doesn’t satisfy the purpose of obtaining a reliable follow-up feedback. Given these limitations, our data concerning visitors’ feedback for follow-up purposes should be considered merely exploratory.

4. DISCUSSION

According to Flay [65], “because outcome research results are specific to the program or policy actually tested, the samples, and the outcomes measured, it is essential that conclusions from the research be clear regarding the program, populations and their settings, and the settings for which their efficacy is claimed.” (p.154). The study confirms that process and result indicators can be collected and analyzed systematically, supporting the advantages of evaluating an innovative natural setting-based intervention in close proximity to emerging problems. A number of other good-practice evaluation principles - such as the search for

statistically unbiased estimates of relative effects, or inclusion of a long-term follow-up with an appropriate interval - were attempted at this evaluation research of KC project, even if with limitations imposed by an exceptional and unconventional intervention setting.

Although heavily reliant on the perceptions of the intervention team results confirm that the program is having impact in the field it is designed for - crisis intervention and HRRM in PAS use in recreational environments. Additionally, KC is addressing a PAS-using population and context that is identified by epidemiology as being at the center of emerging patterns of use and related problems [4, 11], and in need of attention from a public health perspective. This is especially relevant since this PAS-using population is considered distant from formal intervention structures [8, 62], and thus particularly able to benefit from an informal and proximal intervention such as the one being offered by KC.

The nature of crisis intervention, the project's approach to settings where behaviors are occurring spontaneously, and the commitment to visitors' well-being dictated that despite the interest in developing evaluation research, minimum interference occurred with intervention process. There was, however, an effort to involve defined samples from defined populations, a criterion identified in prevention research as the first objective of efficacious intervention trials, since statements of efficacy should be able to determine that a program is specified to produce a given outcome for a given population [65].

According to the literature, offering a safe, supportive and comfortable care space is one of the principles of crisis intervention in recreational environments [14, 32, 33, 51]. Our data confirm the effectiveness of project logistics from the visitors' perspective, which is indicative of the program's ability to deliver this level of support.

According to the EMCDDA multiple drug use among adolescent Europeans has been increasing since the 90's in a variety of drug-using repertoires, potentially indicating early initiation and risk behaviors; among young adults it can be symptomatic of more established patterns of multiple substance use, potentially carrying long-term health problems and acute risk during leisure time [30]. For these reasons, signaling poly drug use has been considered highly relevant for HRRM intervention. Our data indicate which PAS were involved in crisis episodes, with LSD and MDMA predominating. Multiple drug use situations involved use of LSD and alcohol, MDMA and cannabis, amphetamines and alcohol, and LSD and MDMA. Epidemiological data available for the EU ignore most of these PAS use patterns, focusing on combined use of cannabis with ecstasy, amphetamines or cocaine [30]. This allows us to conclude that our participants present a multiple drug use pattern that probably remains unaccounted for in available epidemiological literature. This also means multiple drug use patterns encompass significant implications for intervention because they make it impossible to accurately associate crisis with specific PAS and mental state alterations, which in turn appeals for a broad and multi determined understanding of crisis in recreational environments. We globally conclude that PAS use and its relation to crisis type and vulnerability require further research.

The study contributes to characterizing crisis in recreational environments, including the episodes that don't include PAS use. This scenario, although less frequent, confirms once more the need for a broad definition of crisis in these contexts [32]. LSD and MDMA are largely predominant in crisis episodes and mental state alterations, cannabis appearing possibly underrepresented. The substance's widely disseminated and normalized use [76] could be responsible for this aspect of our data, since Visitors might tend not to relate cannabis to negative outcomes, particularly crisis episodes.

The measurements for PAS use in our study are based on self-reported use - that is, visitors reported the substances they believed they had ingested, or the PAS they were told they were ingesting. Consequently, this influences feedback concerning the PAS visitors believe are more responsible for unpleasant effects and crisis triggering. Although this is a common bias of self-reported use measurement (even in epidemiological research), we assume it presents particularly severe implications in our intervention context, since PAS circulating in recreational environments frequently include adulterants and/or other products not announced by sellers, unknown to users, not accounted for in self-reported use, and potentially responsible for unpleasant effects and crisis. According to the 2nd TEDI Trend Report that has published data relying on drug checking services implemented by several HRRM teams all across Europe, MDMA, amphetamines and cocaine remain the most frequent substances used in recreational settings, with great variation considering their levels of purity and the number and percentage of adulterants. KC evaluation data also reflects this phenomenon. Because of this we cannot accurately say if LSD and MDMA are in fact responsible for such high prevalence and crisis symptoms among KC visitors.

Studies in the past have determined that anxiety, depression and dissociation were influenced by the frequency and length of the lifetime prevalence rate of PAS use [77], that PAS use could trigger or intensify the development of psychopathology [78], and that people presenting expressive emotional or psychiatric distress pre-existent to crisis will potentially experience escalation in symptoms following PAS use [14, 79]. Our data also support the existence of relation between PAS use and psychopathology. Unsolved crisis episodes tend to reflect cases where it was suspected visitors had a pre-existing psychopathological diagnosis. However, the relation between PAS use and psychopathology cannot be presented linearly since it is yet to be determined if use actually triggers mental disorders or if, on the other hand, contributes to an escalation of preexisting symptoms. Future follow-up studies should analyze visitors' PAS use patterns and trajectories, which should increase knowledge on the relation between these variables.

The program used very diverse intervention strategies. Among them, psychotherapeutic strategies were the most frequently used. Psychotherapeutic strategies were notable for their contribution in helping visitors to traverse crisis, as reported by our follow-up sample. The program's approach is consistent with literature according to which help and support professionals should share common skills in terms of their ability to relate to others, use active listening, and

demonstrate deep understanding of problems being presented by people in need [80]. Our data support literature indicating these skills as especially important in crisis intervention, since they are essential to reduce crisis impact and increase coping [53].

Medical strategies, which included the use of prescribed allotropic as well as homeopathic substances, were used to facilitate resolution of a limited number of crisis episodes. However, our data presents limitations in reporting the number and types of episodes where such strategies were deployed.

According to literature, crisis resolution occurs when the person is feeling comfortable and no emotional or psychosomatic symptoms are presented [14]. Significant differences between pre- and post-tests of average crisis symptoms indicate that expected results were confirmed and crisis episodes were resolved by intervention. Some aspects may pose limitations to this conclusion. Firstly the sample we considered for our pre- and post tests is considerably smaller than the total of interventions performed. Secondly these results were only considered globally since our instrument's subscales lacked the required internal consistency, preventing the analysis of symptoms distribution in the various subscales. A number of reasons may explain these limitations. The considerable loss of respondents is possibly explained by the large number of measurements that relied on sitters' feedback. We have altered the instrument's structure to facilitate this feedback by sitters and prevent loss of data in the future. Further studies aimed at the instrument's psychometric properties are currently being developed, which in the future will allow an increased understanding of the evolution of crisis symptoms. However, we believe the project's effectiveness in addressing crisis episodes and contributing to crisis resolution is overall demonstrated.

Long term impact was expressed with respondents stating that they acquired a more positive attitude towards themselves and relations with significant others following crisis intervention. These results seem to confirm what Grof & Grof [81] have signaled as the potential for crisis to bring resolution to relevant life problems, to promote healing and, according to Stolaroff [33], to allow the progression from a state of distress to a more integrated resolution of personal and relational troubles.

However, a need remains for knowledge about the circumstances of less positive crisis resolution. According to our long term impact follow-up study a very small group of respondents says crisis resulted in an increase of symptoms or in more severe presentation of previous symptoms. It is possible that this result can be explained in relation to previous psychopathology or vulnerability to psychopathology without previous manifestations, but the relation between these two variables must be further researched. Yung *et al* [82] have studied several groups in the process of determining ultra-high risk of psychosis and relation to psychosis onset, including a group with history of brief, self-limited psychotic symptoms assessed with an instrument that detected sub-threshold and threshold levels of delusions, hallucinations and formal thought disorder.

KC attended a number of situations referred above as *mental crisis related* and *not related to PAS use*. Although both included visitors that presented symptoms related to paranoia, dissociation or depression, they could be distinguished whenever the persistence of these symptoms remained far beyond the expected length of PAS use-related effects. We consider this type of less frequent crisis episode to be possibly related to a previous diagnosis, and these individuals to be at higher risk for mental disorders. If, on the one hand, it is possible that intervention is having demonstrable impact on preventing further progression of these at-risk mental states [83] among those that present increased vulnerability to mental disorders, on the other hand it is expected that individuals with a previous diagnosis are most likely to see their condition aggravated after a crisis episode.

The project's characteristics and crisis intervention features themselves are impediments to an accurate knowledge about such levels of impact. However, it is expected further research will keep contributing to the understanding of the relation between PAS use, crisis, and mental disorders. And it is also possible to conclude that the intervention's proximity to these episodes of increased risk for mental disorders might prove to be a relevant tool in the prevention of the onset of chronic and more severe mental illnesses.

Other results concern the intervention's long term impact in relation to HRRM. One of KC's goals is to increase knowledge of the risks and benefits of altered states of consciousness and promote learning on how to deal with future problems. A small group of respondents to our qualitative follow-up study reports having acquired knowledge and increased awareness on strategies for safer PAS use. Other groups of respondents also reported having learned how to deal with crisis episodes, and having developed a more responsible attitude towards PAS use in general. Even though these results refer to a small, qualitative follow-up sample and need to be confirmed by further studies, we believe these to be encouraging data in terms of the project's ability to reduce risk and promote safety.

We emphasize that follow-up data refer to a very limited and selective sample preventing us from reliable evidence-based conclusions regarding long term intervention impact. Nonetheless, and even if only exploratory, we have chosen to include these data since we believe them to offer valuable input about relevant aspects to consider in future research, and since updated literature about benefits of psychedelic use and psychedelic crisis intervention are so scarce.

Finally, some clinical and practical implications emerge from KC evaluation research. Since difficulties in crisis resolution are expected among episodes that involve higher risk of mental health disorders, the program should take into consideration how intervention with these visitors could be improved. Partnerships with mental health structures outside the festival and providing the visitor with written information about their crisis episode for future reference might be useful resources to promote in the future.

LIST OF ABBREVIATIONS

DSM-V	= Diagnostic and Statistical Manual of Mental Disorders
HRRM	= Harm Reduction and Risk Minimization
KC	= Kosmicare
MSEC	= Mental State Exam Checklist
PAS	= Psychoactive Substances

CONFLICT OF INTEREST

Kosmicare Research hasn't received until the present time any formal financial contributions. Research is developed thanks to the same institutional collaborations that allow the project's implementation – a partnership between Boom Festival Production, the Centre for Studies in Human Development - Faculty of Education and Psychology – Catholic University of Portugal (Porto), and the General Directorate for Intervention on Addictive Behaviors and Dependencies (Government of Portugal). The team involved in research is also involved in the project's implementation. This is the case for Maria Carmo Carvalho, Mariana Pinto de Sousa, Paula Frango, Joana Carvalho, Tânia Rodrigues and Marta Rodrigues. Research team members develop research activity as part of their academic and/or technical activities, performed as professionals of the referred institutions. An exception to this scenario is researcher Joana Carvalho currently contributing voluntarily to Kosmicare research.

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