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# Personal and Venue Characteristics Associated With the Practice of Physical and Sexual Aggression in Brazilian Nightclubs

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## Abstract

Violence among young adults is an increasing public health concern, especially in the context of nightlife, such as around nightclubs and bars. Nightlife is associated with alcohol, drugs, and increased violence, but little is known about personal and environmental factors related to physical aggression and sexual violence in nightclubs. This study aimed to determine personal and environmental risk factors for physical and sexual aggression in nightclubs in São Paulo, Brazil. Data were collected among nightclub patrons through use of a portal survey at the entrances and exits of 31 nightclubs. Men and women over 18 years old were systematically sampled while waiting in entrance lines. At the entrance, participants provided information about sociodemographic characteristics, drug use, alcohol use, and other risky behaviors during the prior 12 months. Upon exiting the nightclub, participants were asked about

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drug use, alcohol use, aggressive behaviors, and other risky behaviors that occurred while in the nightclub. Each participant was offered a breathalyzer test when entering and exiting the nightclub. Participants who used drugs in the nightclub, planned to have sex after leaving the club, or were younger in age were more likely to commit an act of physical aggression. Participants who attended nightclubs playing eclectic music, drank before arriving at the nightclub, and had elevated breath alcohol concentration at the entrance or exit were more likely to commit an act of sexual aggression. Study findings point to specific risk factors and can inform the development of social environmental prevention strategies to prevent physical and sexual aggression within nightclubs.

**Keywords**
youth violence, drinking environment, risky behaviors, nightclubs, Brazil

## Introduction

Violence among youth and young adults is a growing public health crisis (Flavahan & Romaine, 2018) and is increasingly regarded as preventable (Massetti & David-Ferdon, 2016; World Health Organization [WHO], 2015). According to a recent report, Latin America is considered one of the most violent regions in the world (Jaitman & Torre, 2017). Homicide rates are 4 times greater than the global average and are accompanied by high economic costs related to violence and crime (Jaitman & Torre, 2017). In Brazil, the annual cost of violence is estimated to be US$124 billion (Jaitman & Torre, 2017). Murray, Cerqueira, and Kahn (2013) showed that Brazilian homicide rates have risen over the years, with a total of 1.09 million homicides between 1980 and 2010 (Murray et al., 2013).

In 2007, it was reported that 12.5% of all deaths in Brazil were caused by violence, mostly among young men (Reichenheim et al., 2011). According to a nationwide Brazilian survey, the public considers violence to be the largest threat to safety and public order (Instituto Nacional de Estudos e Pesquisas Educacionais & Anísio Teixeira [NEP], 2011).

Although data on homicide in Brazil are common, data on sexual violence are rare and sporadically measured. In 2013, it was estimated that 0.26% of the Brazilian general population suffered sexual aggression in the past year, corresponding to 527,000 attempts or cases of rape in the country, of which the police were notified in only 10% of cases (Cerqueira & Coelho, 2014). Almost 90% of the victims were female and 70% were children or adolescents (Cerqueira & Coelho, 2014). Regarding physical aggression, 2% of the

residents of Rio de Janeiro (one of the most violent cities in Brazil) aged 15 years or over said they were beaten in the past 12 months and 9% reported physical aggression in their lifetime, which was more common in slum areas (Zaluar, 2009).

Although aggressive behavior, of both physical and sexual nature, occurs under many circumstances, violent behavior is highly prevalent around bars and clubs (Mattinson, 2001). The British Crime Survey reported that about 33% of violent acts involving strangers occurred in or near nightlife venues (Mattinson, 2001). Half of the victims of these assaults reported that the person perpetuating the violence was intoxicated (Mattinson, 2001). Alcohol consumption is associated with disorderly behavior (e.g., physical fighting, gun violence, and club rioting), which is often viewed by nightclub patrons as an inevitable component of nightlife culture (Winlow & Hall, 2006). While alcohol is known to be a predictor of violent behavior (Hughes, Anderson, Morleo, & Bellis, 2008), little is known about other environmental or personal factors that lead to either physical or sexual violence.

It is well documented that polydrug use, including both legal and illicit drugs, are frequently used in Brazilian nightclubs (Carlini & Sanchez, 2018; Sañudo, Andreoni, & Sanchez, 2015), including the use of drugs such as ecstasy and lysergic acid diethylamide (**LSD**) (Battisti, Noto, Nappo, & Carlini, 2006; Remy, Buttram, Kurtz, Surratt, & Pechansky, 2017). Factors that have been related to such club alcohol and drug use include all-you-can-drink services and the type of music played (Carlini, Andreoni, & Sanchez, 2017). Such research has suggested that Brazilian nightclub settings facilitate high-risk behaviors through environmental factors, for example, related to alcohol sales and areas for sex (Carlini & Sanchez, 2018). While nightclubs have been associated with excessive alcohol consumption, drug use (Bellis et al., 2010; Hughes, Anderson, Morleo, & Bellis, 2008; Krug, Mercy, Dahlberg, Zwi, & Lozano, 2002), and high levels of violence (Schnitzer et al., 2010), to our knowledge, there are no studies that have examined perpetrators of nightlife violence specifically in Brazil.

Alcohol and drug use, which are highly prevalent in nightclubs, may inhibit a person's ability to make safe and responsible choices regarding risky behaviors such as sexual encounters (Scott-Ham & Burton, 2005; Shrier, Emans, Woods, & Durant, 1996). Furthermore, alcohol and other drugs have been used to facilitate or enhance sexual encounters (Bellis et al., 2008). A study conducted in São Paulo showed that 11.5% of adults and young adults interviewed upon exiting a nightclub reported being victims of sexual assault (including forced kissing or groping, and non-consensual sexual advances) while at the nightclub (Sanchez, Carlini, Sanudo, & Wagner, 2016).

Bars and nightclubs frequently attract people with similar sociocultural profiles, and the type of music played in each venue can reflect people's behavior (Forsyth, 2009). Research by Rentfrow and Gosling (2007) suggests there is an association between people's music preferences and their personalities (Rentfrow and Gosling, 2007). For example, healthy and athletic individuals usually prefer intense and stimulating kinds of music, whereas extroverted individuals often prefer upbeat and energetic kinds of music (Rentfrow and Gosling, 2007). In addition, electronic music venues have been associated with violent behaviors, which may also be associated with the psychological profile of patrons who frequent those venues (Lozon & Bensimon, 2014).

The objective of this study was to determine personal and environmental factors associated with the practice of physical aggression and sexual aggression in nightclubs in São Paulo, Brazil, a city considered to have one of the most active nightlife scenes in the world (Manson, 2014; "Top 10 Nightlife Cities"). With a focus on prevention, we also aimed to understand circumstances around possible risk factors, such as when intoxication or drug use may be occurring, in relation to aggression in nightclubs.

## Method

### *Sampling*

Data among nightclub patrons in São Paulo, Brazil were collected between January and July of 2013 using a portal survey, a method captures information from or about participants in the moment when a behavior occurs. The portal survey was used to interview and observe people at the entrance and exit of 31 nightclubs, which are generally considered high risk settings for substance abuse (Voas, 2006). In this study, nightclubs were defined as venues that require an entrance fee, control entry and exit of patrons, sell alcoholic beverages, and have at least one dance floor. Cluster sampling was performed in two stages. In the first stage, nightclubs were systematically selected with a probability proportional to the nightclub's maximum occupancy. A list of potential nightclubs was created by searching in magazines and guides reporting on recreational activities in São Paulo. In addition, a Google search for "São Paulo bars, nightclubs and discos" (in Portuguese) was conducted. The first 10 pages that appeared on Google were used to create a list of 150 potential nightclubs. Using the systematic selection method described above, 40 nightclubs and 7 replacement venues were chosen. The acceptance rate among nightclubs contacted was 66%, resulting in 31 nightclubs.

The second stage of the cluster sampling consisted of systematic sampling of every third person in the entrance line at the selected nightclubs. A target sample size of 1,600 nightclub patrons was estimated to be needed to detect an absolute precision of 5% with a 95% confidence interval (CI). Based on data from previous studies, we aimed to approach at least 2,912 nightclub patrons to account for an expected 30% refusal rate at the nightclub entrance and a 40% lost to follow-up at the exit (Clapp et al., 2007). Eligibility criteria for participation included being at least 18 years of age and having the intention of entering the nightclub. Nightclub patrons were not interviewed if they showed signs of severe intoxication, including staggering gait on its own, glazed eyes and slurred speech, or combination of staggering gait with either of these other two signs (Perham, Moore, Shepherd, & Cusens, 2007). Details regarding the sample weights calculated from nonresponse and on poststratification can be found elsewhere (see Carlini et al., 2014).

## *Data Collection and Instruments*

Each of the 31 selected nightclubs were visited on the busiest night of the week, which was indicated by the club manager. Data were collected beginning when the nightclub opened, usually around 10:30 p.m., until the nightclub closed, usually around 7:00 a.m. the next day. Seventy-five percent of the nightclubs were visited on a Friday or Saturday. Twenty-five percent of the clubs were visited on other days of the week.

Nightclub patrons who were selected and agreed to participate were asked to answer two questionnaires: one at the entrance of the club and the other at the exit. The entrance interview included questions about sociodemographic information, alcohol use, drug use, and other risky behaviors in the previous 12 months. The exit interview included questions about alcohol use, drug use, acts of aggression, and other risky behaviors while in the nightclub. Following each questionnaire, participants were asked to take a breathalyzer test (Drager Alcotest 7410 Plus RS) to determine breath alcohol concentration. To identify participants at the exit and match entrance data to exit data, each participant was given a bracelet with a unique identification number.

## *Variables*

In our study, the practices of physical aggression and sexual aggression while in the nightclub were used as dependent variables. Both variables were categorized as "yes" or "no." Having performed an act of physical aggression was defined as answering yes to any of the following questions: "Did you intentionally break any objects while in the nightclub?" "Were you involved

in a fight or aggressive behavior in the nightclub?" "Did you push someone in a rough manner while in the nightclub?" or "Did you hit or hurt someone while in the nightclub?" Having performed an act of sexual aggression was defined as answering yes to either of the following questions: "Did you touch or kiss someone in a sexual way without their permission?" or "Did you have sexual relations with someone against their will?"

Covariates included sociodemographic variables: gender, age, ethnicity, marital status, socioeconomic status (SES), lesbian/gay/bisexual/transgender (LGBT) identification, education, and living companions. Music style, noted by the field staff when collecting data, was used as a proxy for the type of nightclub. Music was categorized as eclectic (several types of music played throughout the night), hip-hop, funk, electronic, pop-dance, rock, and sertanejo or forro (Brazilian country music). Due to low frequencies, hip-hop and funk were combined into one variable, and pop-dance and rock were classified as "other."

SES was based on the *Brazilian Economic Classification* (ABEP 2012), a standardized Brazilian survey assessment tool that includes education level of the household head, possession of various types of consumer goods (e.g., cars and DVD sets), and number of housekeepers (ABEP, 2012). This instrument was used to assign participants to subgroups "A" through "E," with A representing the highest economic stratum. Subgroup B represents the "medium" socioeconomic status group shown in Table 1. For our analysis, the low frequency subgroups "C," "D," and "E" were grouped together in the "low" socioeconomic status group shown in Table 1. Due to low frequency, education level was dichotomized as "secondary education or below" and "university or higher." The former included participants whose highest educational degree was secondary school or below. The latter contained participants who completed the university or had a postgraduate education. Marital status was categorized as "single" (either with or without a significant other), "married," or "other" (including divorced, widowed, or cohabitating).

Independent variables included risky behaviors such as drug use while in the nightclub, drinking before entering the club (henceforth referred to as "predrinking"), breath alcohol concentration (BrAC) upon entering and exiting, and plans to have sex. Drug use was defined as a binary variable and was coded as "yes" if the participant used any of the following drugs while in the nightclub on the night of the survey: marijuana, cocaine, ecstasy, inhalants, ketamine, amphetamine, and hallucinogens (such as LSD or mushrooms). Any alcohol in the breath (BrAC > 0.0 mg/L) was defined as "yes" if the breathalyzer test showed any alcohol content above 0.0 mg/L. Due to the exclusion of severely intoxicated patrons resulting in a smaller sample of individuals with higher alcohol levels, we chose to define alcohol in the

**Table 1.** Characteristics of Study Participants at the Entrance of the Nightclubs.

| Characteristics | Total, *n* (%) | Sexual Aggressor (*n* = 69) | *p* value | Physical Aggressor (*n* = 113) | *p* value |
|---|---|---|---|---|---|
| Sociodemographic variables | | | | | |
| Gender | | | .02 | | .05 |
| Male | 1,096 (60.8) | 51 (4.7) | | 79 (7.1) | |
| Female | 708 (39.2) | 18 (2.5) | | 34 (4.8) | |
| Age group (years) | | | .03 | | <.001 |
| 18-25 | 996 (55.2) | 49 (4.9) | | 83 (8.2) | |
| 26-33 | 512 (28.4) | 12 (2.3) | | 19 (3.7) | |
| ≥34 | 296 (16.4) | 8 (2.7) | | 11 (3.7) | |
| Ethnicity | | | .22 | | .62 |
| White | 1,703 (69.6) | 43 (3.39) | | 76 (5.93) | |
| Brown | 429 (19.8) | 14 (4.35) | | 19 (5.85) | |
| Black | 184 (7.5) | 10 (7.30) | | 9 (6.57) | |
| Other | 67 (2.8) | 2 (4.44) | | 5 (10.87) | |
| Marital status | | | .35 | | .05 |
| Single | 1,572 (87.5) | 64 (4.1) | | 97 (6.1) | |
| Married | 148 (8.2) | 4 (2.7) | | 14 (9.5) | |
| Other | 77 (4.28) | 1 (1.3) | | 1 (1.3) | |
| Socioeconomic status[a] | | | .31 | | .54 |
| C, D, E (low) | 323 (17.9) | 17 (5.3) | | 16 (4.9) | |
| B (medium) | 1,006 (55.8) | 34 (3.4) | | 66 (6.5) | |
| A (high) | 475 (26.3) | 18 (3.8) | | 31 (6.4) | |
| LGBT[b,c] | 546 (30.3) | 25 (4.6) | .27 | 34 (6.2) | .96 |
| Highest education completed | | | .006 | | .1 |
| Secondary or below | 1,066 (59.82) | 51 (4.8) | | 74 (6.9) | |
| University or higher | 716 (40.18) | 16 (2.2) | | 36 (5.0) | |
| Living companions | | | .51 | | .6 |
| Family | 1,212 (67.37) | 49 (4.0) | | 78 (6.4) | |
| Peers, alone, or other | 587 (32.63) | 20 (3.4) | | 34 (5.7) | |
| Nightclubs | | | | | |
| Type of music in nightclub | | | .002 | | .08 |
| Sertanejo and Forro | 293 (16.24) | 5 (1.7) | | 12 (4.1) | |
| Hiphop and funk | 184 (10.20) | 8 (4.4) | | 12 (6.5) | |
| Electronic | 504 (27.94) | 23 (4.6) | | 38 (7.5) | |
| Eclectic | 409 (22.67) | 26 (6.4) | | 33 (8.0) | |
| Other | 414 (22.95) | 7 (1.7) | | 18 (4.3) | |
| Monthly frequency at nightclubs | | | .02 | | .29 |
| 0-4 times | 1,282 (71.06) | 41 (3.2) | | 73 (5.6) | |
| 5-9 times | 285 (15.80) | 19 (6.7) | | 22 (7.7) | |
| ≥10 times | 237 (13.14) | 9 (3.8) | | 18 (7.5) | |
| Alcoholic intake | | | | | |
| Predrinking[c] | 678 (37.6) | 36 (5.3) | .01 | 47 (6.9) | .34 |
| Alcohol in blood at entrance[c] | 657 (36.9) | 35 (5.3) | .01 | 45 (6.8) | .38 |
| Alcohol in blood at exit[c] | 1,113 (62.1) | 50 (4.5) | .07 | 74 (6.6) | .45 |
| BrAC > 0.38 at entrance[c] | 1,616 (90.6) | 10 (6.0) | .12 | 13 (7.9) | .34 |
| BrAC > 0.38 at exit[c] | 556 (31.0) | 32 (5.8) | .005 | 49 (8.7) | .003 |

*(continued)*

**Table 1. (continued)**

| Characteristics | Total, *n* (%) | Sexual Aggressor (*n* = 69) | *p* value | Physical Aggressor (*n* = 113) | *p* value |
|---|---|---|---|---|---|
| Risky behaviors | | | | | |
| Plans to have sex[c] | 387 (21.46) | 20 (5.2) | .12 | 34 (8.7) | .02 |
| Recreational drug use | | | | | |
| Before coming to the nightclub[c] | 118 (11.4) | 12 (4.4) | .6 | 28 (10.3) | .002 |
| While in the nightclub[c] | 271 (15.3) | 7(.9) | .14 | 16 (13.2) | .002 |

*Note.* *p* value is for the Pearson's chi-square test of independence. LGBT = lesbian/gay/bisexual/transgender; BrAC = breath alcohol concentration.
[a]Based on the *Brazilian Economic Classification.*
[b]Lesbian/gay/bisexual/transgender.
[c]Yes category.

breath as none or any (rather than using a higher cutoff of a 0.38 mg/L BrAC for binge drinking).

Samsung Galaxy tablets were used to collect questionnaire data and send the data to a centralized database in real time.

## *Statistical Analyses*

Descriptive statistics were calculated including frequencies and examinations of bivariate associations with the outcomes of interest. Multivariable logistic regression models were adjusted for gender, age, SES, and music style, which were included either because of bivariate statistical significance ($p < .05$) or based on a priori theoretical considerations. Because many of our measures of substance use often co-occur (i.e., drug use within the nightclub, predrinking, breath alcohol concentration at the entrance, and breath alcohol concentration at the exit), each was included in separate models to predict both physical and sexual aggression. We computed weights for nightclubs, patrons within each nightclub, and patrons overall. Poststratification adjustments were made using the information about the sex of all patrons present at each nightclub. Nonparticipation adjustment rates were also computed to adjust for the probability of selection in the nightclub entrance line (Carlini et al., 2014). All analyses were carried out using STATA 13 software, using complex survey (svy) commands.

## *Ethics*

The Research Ethics Committee of the Federal University of São Paulo (Universidade Federal de São Paulo—UNIFESP) approved the recruitment and procedures of this study (protocol number 795276).

## Results

Of the 3,063 people recruited, 80% accepted participation at the nightclub entrance resulting in 2,422 entrance interviews. Of those lost to follow-up at the exit, 2% ($n$ = 12) refused to participate, 11.3% ($n$ = 67) were unable to respond due to severe intoxication, and 86.6% ($n$ = 511) were missed at the exit. A follow-up rate of 76% at the exit of the nightclub resulted in 1,832 individuals who completed both the entrance and exit interviews; 1,822 people completed both breathalyzer tests (data not shown). As shown in Table 1, the majority of participants were between the ages of 18 and 25 years, single, lived with family members, and had middle to high SES. The largest proportion of participants attended venues playing electronic music (27.9%) and the smallest proportion of participants attended venues that played hip-hop or funk music (10.2%). Approximately 40% of participants reported drinking before coming to the nightclub. At the nightclub entrance, about 9.2% of patrons showed signs of binge drinking (i.e., > 0.38 mg/L BrAC) compared with 31% of patrons at the exit.

As seen in Table 1, the majority of participants who committed acts of sexual or physical aggression were men, were between 18 and 25 years of age, were single, had middle SES, and had completed secondary education or below. There was no significant relation observed regarding sexual identity or ethnicity as risk factors for aggression. Most patrons who committed acts of aggression reported that they did not take drugs before coming to the nightclub or while in the nightclub. Ethnicity was self-reported. Of the total (2,422), data showed the following results: White ($n$ = 1,703, 69.6%), Brown ($n$ = 429, 19.8%), Black ($n$ = 184, 7.5%), and other ($n$ = 79, 3.0%).

As seen in Table 2, participants who reported using drugs while in the nightclub were twice as likely to perform an act of physical aggression than those who did not use drugs (odds ratio [OR] = 2.06, 95% CI: [1.09, 3.89]). In addition, participants who reported that they planned to have sex after leaving the nightclub were more likely to use physical aggression in the nightclub than those who did not (OR = 1.60, 95% CI: [1.04, 2.46]). Increasing age of the nightclub patrons was inversely associated with of the practice of physical aggression (OR = 0.95, 95% CI: [0.92, 0.98]). Drinking before coming to the nightclub and breath alcohol concentration at entrance or exit were not significantly related to acts of physical aggression. Although the OR corresponding to breath alcohol concentration upon exiting the nightclub in relation to practicing physical aggression was elevated, it was not statistically significant (OR = 1.59, 95% CI: [0.82, 3.08]).

Regarding the practice of sexual aggression as an outcome, shown in Table 3, participants who attended nightclubs playing eclectic music (venues playing several musical styles on the same night) were over 3 times more likely to commit

**Table 2.** Logistic Regression Models Displaying Associations Between Sociodemographic and Environmental Factors and Acts of Physical Aggression.

| | Used Drugs While in the Nightclub | | Drinking Before Coming to the Nightclub | | Alcohol in Breath at Exit | | Alcohol in Breath at Entrance | | Participant Reports They Plan to Have Sex After Leaving Nightclub | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variables | OR (95% CI) | *p* value | OR (95% CI) | *p* value | OR (95% CI) | *p* value | OR (95% CI) | *p* value | OR (95% CI) | *p* value |
| Gender[a] | | | | | | | | | | |
| Female | 0.59 [0.33, 1.03] | .06 | 0.66 [0.43, 1.03] | .07 | 0.64 [0.41, 0.99] | .05 | 0.68 [0.44, 1.04] | .05 | 0.70 [0.45, 1.09] | .11 |
| Age | 0.96 [0.92, 1.00] | .06 | 0.95 [0.92, 0.98] | <.01 | 0.95 [0.92, 0.98] | <.01 | 0.95 [0.92, 0.98] | <.01 | 0.95 [0.92, 0.98] | <.01 |
| Socioeconomic status[b] | | | | | | | | | | |
| B (medium) | 1.12 [0.63, 1.99] | .71 | 1.12 [0.71, 1.77] | .61 | 1.09 [0.69, 1.71] | .73 | 1.12 [0.71, 1.77] | .73 | 1.11 [0.70, 1.75] | .66 |
| C/D/E (low) | 0.71 [0.31, 1.63] | .42 | 0.76 [0.40, 1.46] | .41 | 0.75 [0.39, 1.42] | .37 | 0.78 [0.41, 1.47] | .37 | 0.74 [0.39, 1.41] | .36 |
| Music style[c] | | | | | | | | | | |
| Hiphop and funk | 1.27 [0.38, 4.30] | .7 | 1.18 [0.51, 2.75] | .7 | 1.19 [0.51, 2.77] | .69 | 1.17 [0.51, 2.73] | .69 | 1.16 [0.50, 2.71] | .72 |
| Electronic | 1.95 [0.76, 5.00] | .17 | 1.60 [0.81, 3.15] | .18 | 1.58 [0.80, 3.13] | .19 | 1.62 [0.82, 3.19] | .19 | 1.58 [0.80, 3.11] | .19 |
| Eclectic | 1.62 [0.62, 4.22] | .33 | 1.65 [0.82, 3.32] | .16 | 1.59 [0.79, 3.22] | .2 | 1.59 [0.79, 3.20] | .2 | 1.64 [0.81, 3.30] | .17 |
| Other | 1.40 [0.52, 3.83] | .51 | 1.13 [0.53, 2.42] | .75 | 1.16 [0.54, 2.48] | .7 | 1.12 [0.53, 2.38] | .7 | 1.14 [0.53, 2.42] | .74 |
| Used drugs while in nightclub | 2.06 [1.09, 3.89] | .03 | | | | | | | | |
| Drinking alcohol before coming to nightclub | | | 1.06 [0.71, 1.59] | .76 | | | | | | |
| Any alcohol in breath (BrAC >0.0 mg/L) at entrance | | | | | 1.11 [0.42, 2.93] | .84 | | | | |
| Any alcohol in breath (BrAC >0.0 mg/L) at exit | | | | | | | 1.59 [0.82, 3.08] | .84 | | |
| Plans to have sex | | | | | | | | | 1.60 [1.04, 2.46] | .03 |

*Note.* OR = odds ratio; CI = confidence interval; BrAC = breath alcohol concentration.
[a]Reference category: male.
[b]Reference category: A (A represents the highest socioeconomic subgroup based on the *Brazilian Economic Classification* and E represents the lowest.).
[c]Reference category: Forro and Sertanejo music.

**Table 3.** Logistic Regression Models Displaying Associations Between Sociodemographic and Environmental Predictors and Acts of Sexual Aggression.

| | Used Drugs While in the Nightclub | | Drinking Before Coming to the Nightclub | | Alcohol in Breath at Entrance | | Alcohol in Breath at Exit | | Participant Reports They Plan to Have Sex After Leaving Nightclub | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variables | OR (95% CI) | *p* value | OR (95% CI) | *p* value | OR (95% CI) | *p* value | OR (95% CI) | *p* value | OR (95% CI) | *p* value |
| Gender[a] | | | | | | | | | | |
| Female | 0.54 [0.25, 1.16] | .11 | 0.56 [0.32, 1.00] | .05 | 0.57 [0.32, 1.02] | .06 | 0.54 [0.30, 0.95] | .03 | 0.54 [0.30, 0.96] | .04 |
| Age | 0.97 [0.91, 1.03] | .35 | 0.96 [0.92, 1.01] | .099 | 0.96 [0.93, 1.01] | .1 | 0.96 [0.92, 1.01] | .1 | 0.96 [0.92, 1.00] | .08 |
| Socioeconomic status[b] | | | | | | | | | | |
| B (medium) | 1.03 [0.46, 2.30] | .95 | 1.17 [0.64, 2.14] | .61 | 1.21 [0.66, 2.24] | .54 | 1.11 [0.61, 2.03] | .73 | 1.10 [0.60, 2.01] | .76 |
| C/D/E (low) | 1.75 [0.67, 4.58] | .25 | 1.99 [0.96, 4.11] | .06 | 2.02 [0.97, 4.20] | .06 | 1.84 [0.90, 3.76] | .1 | 1.72 [0.84, 3.51] | .14 |
| Music style[c] | | | | | | | | | | |
| Hiphop and funk | 4.69 [0.87, 25.21] | .07 | 1.86 [0.58, 5.95] | .29 | 1.76 [0.55, 5.69] | .34 | 1.90 [0.60, 6.05] | .28 | 1.93 [0.61, 6.15] | .26 |
| Electronic | 2.67 [0.57, 12.52] | .21 | 2.01 [0.74, 5.44] | .17 | 2.09 [0.77, 5.66] | .15 | 2.22 [0.82, 5.97] | .12 | 2.17 [0.80, 5.84] | .13 |
| Eclectic | 4.39 [0.97, 19.90] | .06 | 3.49 [1.29, 9.46] | .01 | 3.33 [1.22, 9.07] | .02 | 3.43 [1.27, 9.30] | .02 | 3.71 [1.37, 10.02] | .01 |
| Other | 0.64 [0.09, 4.62] | .66 | 0.91 [0.28, 2.95] | .88 | 0.96 [0.30, 3.09] | .95 | 1.00 [0.31, 3.20] | 1.0 | 1.05 [0.33, 3.38] | .93 |
| Used drugs while in the nightclub | 1.57 [0.63, 3.92] | .33 | | | | | | | | |
| Drinking alcohol before coming to nightclub | | | 1.78 [1.08, 2.95] | .03 | | | | | | |
| Any alcohol in breath (BrAC >0.0 mg/L) at entrance | | | | | 3.78 [1.47, 9.73] | <.01 | | | | |
| Any alcohol in breath (BrAC >0.0 mg/L) at exit | | | | | | | 2.30 [1.03, 5.16] | .04 | | |
| Plans to have sex | | | | | | | | | 1.40 [0.81, 2.41] | .23 |

*Note*. OR = odds ratio; CI = confidence interval; BrAC = breath alcohol concentration.

[a]Reference category: male.

[b]Reference category: A (A represents the highest socioeconomic subgroup based on the *Brazilian Economic Classification* and E represents the lowest.).

[c]Reference category: Forro and Sertanejo music.

acts of sexual aggression than those who attended nightclubs playing forro or sertanejo (ORs for clubs playing eclectic music varied from 3.33 to 4.39 across five models—with minor differences in adjustments—while clubs playing forro or sertanejo served as the reference group). Across all our adjusted models, females were 43% to 46% less likely to be sexually aggressive compared with men (ORs varied from 0.54 to 0.57 across five models).

Patrons who reported predrinking were more likely to act sexually aggressively while in the nightclub (OR = 1.87, 95% CI [1.08, 2.95]). Breath alcohol concentration at the entrance and breath alcohol concentration at the club exit were positively associated with increased risk of committing an act of sexual aggression while in the nightclub (OR = 3.78, 95% CI [1.47, 9.93]; OR = 2.30, 95% CI: [1.03, 5.16], respectively). SES was not associated with either physical or sexual aggression among nightclub patrons.

## Discussion

This study is the first epidemiological study conducted in Brazil that examined risk factors associated with increased aggression within a nightclub context. Violence within the nightlife context at bars and in nightclubs is well documented in developed countries (Bellis, Hughs, & Anderson, 2007; Hughes, Bellis, et al., 2008; Krug et al., 2002). We found in São Paulo that 6.2% and 3.8% of nightclub patrons in our study committed acts of physical and sexual aggression, respectively. Furthermore, our study showed that patrons who used drugs within nightclubs, planned to have sex afterward, and were younger were more likely to commit acts of physical aggression while in the clubs. We also found that patrons with elevated breath alcohol concentration at the entrance and exit of nightclubs, those who practiced predrinking, and those attending nightclubs playing eclectic music were more likely to commit acts of sexual aggression. These findings can inform development of social environmental prevention strategies within these settings to curb the problem of physical and sexual aggression within nightclubs.

Our study highlights the use of drugs as a risk factor for physical aggression and alcohol use as risk factor for sexual aggression in nightclubs. Studies show that in the case of most of sexual assaults incidents, aggressors are under the influence of either alcohol or other drugs (Abbey, Zawacki, Buck, Clinton, & McAuslan, 2001; Grisso et al., 1999; Koss, 1988; Miczek et al., 1993; Pernanen, 1991; Testa, 2002, 2004; Ullman, 2003), with alcohol being the most commonly used substance (Abbey, Clinton, McAuslan, Zawacki, & Buck, 2002). For example, a report from the National Violence Against Women Survey (Brecklin & Ullman, 2002) showed that aggressors who were drinking or under the influence of alcohol were more likely to engage in

sexual assault. Although Brazilian studies on sexual aggression among the general population (Moura, Gandolfi, Vasconcelos, & Pratesi, 2009; Schraiber et al., 2007; Schraiber, D'Oliveira, França Junior, & Grupo de Estudos em População, Sexualidade e Aids, 2008) or among young adults (de Moraes, Cabral, & Heilborn, 2006; Hines, 2007) are still uncommon, the WHO classified Brazil as a country with high rates of sexual aggression (Krug et al., 2002). Our study, examining behaviors and music type as risk factors for aggression, adds to prior research that has focused on the environmental context, such as bars' and nightclubs' physical characteristics (poor, unclean, and uncomfortable conditions; crowded establishments), which have been associated with violent behaviors (Graham, Homel, Plant, Single, & Stockwell, 1997; Homel & Clark, 1994).

Predrinking, or drinking before going to the nightclub, was found to be associated with sexual aggression but not physical aggression. Predrinking has been found to be linked to other risky behaviors (Santos, Paes, Sanudo, & Sanchez, 2015), including an increased likelihood of suffering alcohol-related harms such as blackouts, vomiting (LaBrie, Hummer, Kenney, Lac, & Pedersen, 2011), alcohol intoxication (LaBrie & Pedersen, 2008), and alcohol-related violence (Borsari et al., 2007). We found participants' characteristics (e.g., younger age and male gender) to also be associated with aggressive behaviors, with older age of the nightclub attendee appearing to be a protective factor against committing acts of both types of aggression. Sañudo et al. (2015) found that increased age also decreased the likelihood of polydrug use. In general, risky behaviors appear to decrease with age, which has important policy implications regarding which age groups to target through interventions.

The likelihood of carrying out an act of sexual aggression was found to be associated with type of music played in the nightclub, predrinking practice, and increased breath alcohol concentration at the entrance to the nightclub. Nightclubs in São Paulo are often distinguished by the type of music played in the venue, and thus certain music genres appeal to a specific type of attendee. Nightclubs playing eclectic music had the highest rates of sexually aggressive acts. It has been found that certain types of music are correlated with increased sexual acts and earlier initiation of sexual encounters (Coyne & Padilla-Walker, 2015 ; Enström & Schmaltz, 2017). The eclectic music scene, or ambiance of such venues, might encourage behaviors related to the assertion of male identity more so than other types of music. Studies report that the content and lyrics of songs can influence how the listener thinks about their environment and the world around him or her and have the potential to influence personality development over the long term (Coyne & Padilla-Walker, 2015; Enström & Schmaltz, 2017). Sanchez et al. (2016)

suggested that women attending nightclubs playing funk party music are more likely to experience sexual abuse compared with women at other nightclubs (Sanchez et al., 2016). Furthermore, these nightclubs appear to be less strict about stopping such occurrences (Sanchez et al., 2016). The nightclub environment or the content of songs (e.g., related to sex) may play a role in increasing sexually risky encounters in such venues (Sanchez et al., 2016). Together, these findings may suggest that different types of nightclubs should focus their attention on different risk factors.

Unlike prior studies, specifically in European cities, which reported that a significant number of male patrons use drugs to enhance their sexual encounters (Bellis et al., 2008), our findings did not show a positive association between drug use and sexual aggression. This may indicate a cultural difference in how nightclub patrons view drugs across South American and European contexts.

Our study showed that people with increased breath alcohol concentration were more likely to commit acts of sexual aggression than those with lower breath alcohol concentration. The abuse of substances may cause psychological changes making drug users become more impulsive, which could lead to a higher chance of getting involved in violence or initiating aggressive behaviors (Kuhns & Clodfelter, 2009). Taking these findings together, alcohol consumption may increase sexual aggression for a wide variety of reasons; interventions should be developed targeting both the victims and aggressors. Some such interventions may include strategies such as improving alcohol policing (i.e., increasing alcohol prices, restrictions for minors, breathalyzer tests) as well as security and surveillance in nightclubs and bars (by providing better public transportation, street lightning, and closed-circuit television systems) (Graham & Homel, 2009; Hughes & Bellis, 2007; WHO & Liverpool John Moores University, 2006). Neither of these findings are meant to suggest that the aggression is the fault of the victim, but rather to identify risk factors that are important in preventing sexual violence in nightclubs.

This study is subject to several limitations. Face-to-face interviews may dissuade people from admitting to aggressive behaviors, and as a result, there may be information bias for the outcome measures. Furthermore, severely intoxicated individuals were not interviewed, which may have skewed the results and excluded those who may have been the most likely to exhibit aggression. Loss to follow-up at the exit of the nightclubs was 25%, with many people being too intoxicated to participate in the exit survey. This could have resulted in an underestimate of aggressive experiences in the nightclub. When performing statistical analysis, the small number of participants in some categories made it necessary to combine several groups, leading to less nuanced results. In addition, though our sample size of (LGBT) perpetrators

was too small to investigate this group in depth in our study, the impact of night life aggression on the LGBT community is an important topic that should be explored in future studies.

To our knowledge, our study was the first to focus on perpetration of violence within the nightlife context in Brazil. The large sample size and the probabilistic sample were important study strengths. In summary, we found that patrons who were male, younger, used drugs in the nightclub, attended nightclubs playing eclectic music, or reported they planned to have sex after leaving the club showed higher levels of physical aggression. In addition, patrons who participated in predrinking or had increased breath alcohol concentration at the entrance were more likely to commit acts of sexual aggression. The findings suggest the need for better understanding and development of effective preventive approaches aimed at reducing risks associated within nightlife context, including violence. Although more confirmatory studies are needed, given the character of São Paulo, a prominent Latin American city for nightlife, the results may have broader generalizability to other large cities in Brazil and results may inform efforts to improve the nightlife safety in other Latin American cities.

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