

# An exploration of marks/injuries related to BDSM sexual experiences

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## Abstract

**Background:** Despite its growing prevalence, BDSM practice (bondage, discipline, dominance, submission, and sadomasochism) is still stigmatized, and little is known about the physical marks and injuries that individuals sustain from consensual BDSM-related activities.

**Aim:** In this exploratory study, we examined BDSM sexual experiences and the physical marks and injuries resulting from these experiences in a convenience sample of 513 US adults.

**Methods:** We examined the extent to which individuals at various stages of BDSM exploration engage with different types of BDSM and kink behaviors, along with the frequency with which they communicate about, inflict, and receive physical marks from these activities.

**Outcomes:** Our main outcome measures were intentional and unintentional marks sustained from BDSM-related activities, BDSM experiences, and the use of safe words.

**Results:** Results revealed that BDSM marks and injuries are common and quite varied (from small scratches to very large bruises) and unintentional and intentional marks differ in terms of typical size, place on body, and severity of injury. Additionally, BDSM experience is positively associated with the use of safe words and marking behaviors.

**Clinical Translation:** Disclosure of marks and injuries, intentional and unintentional, may be improved if health care providers are aware of, and make efforts to reduce stigma surrounding, BDSM and rough sex activity.

**Strengths and Limitations:** The findings of this study must be interpreted with acknowledgment of the limitations that it was a survey study with a convenience sample. However, as one of the few studies exploring the marks and injuries sustained from BDSM activities, the exploration of intentional and unintentional marks sustained provides a critical starting point for future examination of BDSM consequences that intersect with health care and the law.

**Conclusion:** Marks and injuries from BDSM-related activities are common, and despite the greater use of safe words, practitioners with more BDSM experience inflict more marks than those with less BDSM experience.

**Keywords:** BDSM; kink; injury; sexual experience; law.

## Introduction

The acts of bondage and discipline, domination and submission, and sadism and masochism are colloquially referred to as *BDSM*, which is challenging to define but typically includes a power exchange between  $\geq 2$  people with the use of sensations—including, at times, pain—to elicit pleasure, often but not exclusively in a sexual context.<sup>1–6</sup> Engaging in such activities is sometimes referred to as *play*, and specific sessions in which such play occurs are referred to as *scenes*, offering an opportunity for individuals to temporarily suspend their typical relationship dynamics and/or consequences of violating societal sexual norms.<sup>7,8</sup> As power dynamics are central for many in the kink community, BDSM practitioners select roles (eg, submissives, dominants, or switches) that signal their control and power within the scene.<sup>1,8</sup>

Historically, BDSM has suffered from negative public perception and is often portrayed as dangerous or pathologic in comparison with stereotypically ordinary sex.<sup>3,9,10</sup> However, the latest *Diagnostic and Statistical Manual of Mental Disorders*,<sup>11</sup> which once included sadism and masochism in its diagnostic category of “paraphilia,” now reads “paraphilic disorder,” implying intense and persistent deviance that is distressful to the individual or harmful to others. This differentiates engagement in BDSM behaviors from a persistent paraphilic disorder and is reflective of a wider cultural shift that has brought BDSM erotics into the mainstream through popular novels and films, such as *Fifty Shades of Grey* and *Bonding*.

Despite this, negative perceptions of BDSM still exist, exacerbated by case reports documenting severe harm, such as

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injuries and death related to autoerotic asphyxiation<sup>12</sup> and BDSM-related strangulation.<sup>13</sup> These incidents highlight the purposeful, pain-inducing activities that may be part of BDSM scenes, which tend to distinguish BDSM from so-called vanilla sex<sup>5,6,8</sup> and provide some practitioners a transcendent, spiritual event or state of mind, often referred to as *subspace*.<sup>7,14-17</sup> Scenes may feature a variety of implements, such as dildos, handcuffs, masks, whips, paddles, and other toys and equipment that can be used to create physical and psychological sensations of pleasure and pain.<sup>8,18</sup> Individuals may also perform acts using parts of their bodies (eg, hands, mouth, penis, breasts), such as spanking, hair pulling, hitting, scratching, biting, controlling partners' breath, and inflicting genital pain.<sup>2,4,18</sup>

The use of implements or body parts can sometimes leave physical marks. Individual practitioners vary widely in their mark tolerance, from avoidance to tolerance of marks not causing serious injury<sup>8</sup> to desire and pride in markings, which can serve as accomplishments and symbols of authenticity for some members of the community, particularly masochists.<sup>6</sup> To date, research has focused mostly on serious injuries sustained through consensual BDSM activity. For example, Echterdiek et al<sup>19</sup> provided a case study of a male patient who sustained acute kidney injury from being spanked >1000 times while strapped to a wooden bench. More recently, Bauer et al<sup>13</sup> documented the details of 3 fatal strangulations resulting from consensual BDSM activities (2 with a dominatrix and 1 with a known sexual partner). Meanwhile, Sprott et al<sup>20</sup> surveyed a large sample of kink-involved adults and found that 13.5% had sustained kink-related injuries. Combined, these studies have shown that marks and injuries can be sustained from consensual BDSM practices; however, a gap in the literature exists related to what types of marks, intentional and non-intentional, are sustained from BDSM-related practices and the extent to which previous BDSM experience relates to those marks.

Additionally, it is unknown to what extent the conventions of BDSM practice (eg, use of safe words) relate to marking behaviors. Over time, BDSM has developed its own community of practitioners with social networks, identities and roles, events,<sup>5,8</sup> and multiple codes of conduct, with consent being central to most BDSM play.<sup>8,14,21,22</sup> In fact, phrases such as “safe, sane, and consensual” and “risk-aware consensual kink” are used to define practices within the BDSM community.<sup>3,16</sup> Within this space, safe words (ie, specific agreed-on words that instantly stop a scene) and stoplight systems<sup>8</sup> help to clarify boundaries. Certainly, consent violations happen,<sup>23,24</sup> but among those who have less BDSM experience or are experimenting with BDSM, the absence of these mutual understandings and safeguards may pose additional risk.

In the current study, our goal was to capture a range of BDSM interests and activities within a general population. As little baseline information exists regarding the marks and injuries sustained during BDSM activities, our goal was to describe patterns in marks and injuries and provide preliminary inductive descriptions of what marking behaviors look like qualitatively and quantitatively. Thus, we posed the following research questions:

*RQ<sub>1</sub>*: What types of intentional and unintentional marks are inflicted and sustained through BDSM-related activities?

*RQ<sub>2</sub>*: How does BDSM experience relate to communication about markings and the infliction (intentional and unintentional) of marks?

Additionally, although previous BDSM literature highlights increased physical and psychological risk of kink activities and use of safe words, no known research has explored within a general population the extent to which the use of safe words is related to individuals' previous BDSM participation or marking behavior. As the BDSM community is known for establishing explicit boundaries to engage in mutually satisfying play within a safe and consensual context,<sup>3,16</sup> we expected the following:

*H<sub>1</sub>*: The use of safe words is positively associated with previous BDSM experience.

*H<sub>2</sub>*: The use of safe words is negatively associated with unintentional marking.

## Methods

### Procedure

The participants were a general population sample of 513 individuals recruited during the same period for a study entitled “An Exploration of Sexual Practices” from Amazon's Mechanical Turk (MTurk; an online crowdsourcing survey pool) and a midsized Midwestern university introductory psychology student pool. These samples were targeted so that we could capture a range in age and sexual experiences beginning in young adulthood and recruit a diverse group of participants by including adults from MTurk, who are known to be more heterogeneous than those in college samples.<sup>25</sup> All participants self-selected for participation (response rate unknown), completed an online consent form indicating that they would be asked about BDSM experiences, and then accessed the same anonymous online survey wherein no personal identifiers or IP addresses were collected. Participants were compensated a nominal amount of money (MTurk) or course credit (student sample) for participation. From an original sample of 698, 185 participants were omitted due to completing <20% of the survey (n = 130); reporting participation in a number of private BDSM scenes at least  $\geq 3$  SDs above the mean of all participants (n = 5); giving nonsense answers to qualitative (n = 2), BDSM engagement (n = 35), or implement (n = 11) questions; and reporting an age <18 years (n = 2).

The survey was institutional review board approved and consisted of 295 questions, including demographic questions, Likert scale and open response questions about BDSM (experience level, activities, equipment, injuries, and marks), and various Likert scale personality-related psychological measures. Quantitative data were analyzed for descriptive statistics with SPSS (version 27; IBM),<sup>26</sup> and qualitative data were analyzed with a content and word frequency analysis (see details in the Marks Received sections). As this was part of a larger study, only the relevant measures are reported here.

### Measures

Prior to the presentation of any questions related to BDSM, participants were provided with the following definition: “BDSM/kink includes various activities involving the exchange of power, pain, or restraint often but not exclusively in a sexual context.” They were then asked to answer the following questions.

### BDSM experience

BDSM experience was measured with 8 single-item measures. For 2 items, participants responded on 5-point Likert

scales: frequency of engagement in BDSM/kink activities (this can be anything from light spanking and bondage to more scripted role play; 0 = never, 4 = daily) and knowledge of BDSM lifestyle (0 = none, 4 = experienced or expert). For the remaining 6 items, participants were given free response options and were asked to provide numeric responses: length of involvement in BDSM/kink (in months), length of interest in BDSM/kink (in months), number of BDSM scenes in public spaces, number of BDSM scenes in private spaces, number of BDSM sexual partners, and number of BDSM-only (nonsexual) partners. The measures and full scales (where relevant) for these variables are listed in Table 2. For ease of comparison, numeric responses were grouped into 5 response categories, which were based on the frequencies for that item.

### **BDSM markings: communication**

To measure the prevalence of communication about marks, we provided a list of 12 types of marks that may occur from BDSM scenes (Table 3) and asked participants to indicate how often they engaged in the following behaviors.

#### *Consent to marks*

To explore how often participants gave implicit or explicit consent to this type of mark, participants were asked about their expectations of marks and consent during BDSM scenes. Specifically, we asked, “How often do you expect/have you consented to RECEIVING the following during any type of play?” Participants responded on a 5-point Likert scale (0 = never, 4 = always). Occurrence statistics for those who indicated that they had expected/consented to the mark more than never were computed for each type of mark. Additionally, responses for all 12 types of marks were averaged for a “consent to marks” score.

#### *Avoidance of marks*

To determine which marks that BDSM participants explicitly did not consent to, we asked, “How often have you stated that you do not want to RECEIVE the following marks during any type of play?” Participants responded on a 5-point Likert scale (0 = never, 4 = always). Occurrence statistics for those who indicated that they had stated that they wanted to avoid the mark more than never were computed for each type of mark. Additionally, responses for all 12 types of marks were averaged for an “avoidance of marks” score.

### **BDSM-inflicted marks**

To measure the occurrence of inflicted marks, we provided a list of 12 types of marks potentially resulting from BDSM scenes (Table 3) and asked participants to indicate how often they had intentionally or accidentally inflicted these marks.

#### *Intentionally inflicted marks*

To examine the occurrence of intentional markings, we asked participants about their experience with inflicted marks. Particularly, we asked, “How often have you INTENTIONALLY INFLICTED the following during any type of play?” Participants responded on a 5-point Likert scale (0 = never, 4 = always). Occurrence statistics for those who indicated that they had intentionally inflicted the type of mark more than never were computed for each type of mark. Additionally, responses for all 12 types of marks were averaged for an “intentionally inflicted marks” score.

#### *Accidentally inflicted marks*

To examine how often marks of each type were inflicted, participants were asked, “How often have you ACCIDENTALLY INFLICTED the following during any type of play?” Participants responded on a 5-point Likert scale (0 = never, 4 = always). Occurrence statistics for those who indicated that they had intentionally inflicted the type of mark more than never were computed for each type of mark. Additionally, responses for all 12 types of marks were averaged for an “intentionally inflicted marks” score.

### **BDSM marks received**

To gather more qualitative information about the types of marks received, we asked participants open-ended questions. We focused on the largest mark, as it was likely to be best remembered and most salient.

#### *Unintentional marks received*

Participants who had received unintentional marks were asked to “describe the largest unintentional mark you have ever received (include size, location).”

#### *Intentional marks received*

Participants who had received intentional marks were asked to “describe the largest unintentional mark you have ever received (include size, location).”

Given the existing literature and our goal for this project, we developed initial coding categories for areas on the body and types of marks. We then used inductive content analysis to identify additional codes until we met conceptual saturation for the qualitative comments. This resulted in a coding scheme comprising 16 types of marks (including unspecified) and 15 body parts (including unspecified). For the complete list of categories, see Tables 4 and 5. Two independent researchers were trained on the codebooks and scored each comment individually. Interrater reliability was good for unintentional ( $\kappa = 0.88$ ) and intentional ( $\kappa = 0.96$ ) marks inflicted. Differences between coders were resolved via discussion.

#### *Inductive understanding of intentional vs unintentional marks received*

We conducted an inductive “bottom-up” analysis of participant responses to build an initial understanding of the different factors at play in marks that were received intentionally vs unintentionally. Briefly described, we used BUTTER software<sup>27</sup> to determine the frequency of words and concepts that participants mentioned in their responses to the previously described prompts. The relative frequency of each term was then compared statistically among corpora to find the degree to which words and phrases were diagnostic of marks received intentionally and unintentionally.<sup>28,29</sup>

### **Demographics**

Finally, demographic questions were asked at the end of the survey. Specifically, participants were asked to report their age, gender, sexual orientation, relationship style, and ethnicity. They also were asked to report the number of relationships that they were a part of at the time of the study, which was entered within a text response.

**Table 1.** Sample characteristics (N = 513).

|  | No.   | %     |
|--|-------|-------|
| Age, y, mean ± SD                        | 29.74 | 12.69 |
| Gender                                   |       |       |
| Man                                      | 214   | 41.7  |
| Woman                                    | 296   | 57.7  |
| Transgender                              | 3     | 0.6   |
| Race/ethnicity                           |       |       |
| White, not Hispanic                      | 383   | 74.7  |
| Black/African American                   | 50    | 9.7   |
| Hispanic                                 | 38    | 7.4   |
| Asian                                    | 24    | 4.7   |
| Biracial                                 | 11    | 2.1   |
| Other                                    | 6     | 1.2   |
| Sexual orientation                       |       |       |
| Heterosexual                             | 424   | 82.7  |
| Bisexual                                 | 61    | 11.9  |
| Gay/lesbian                              | 21    | 4.1   |
| Asexual/demisexual                       | 4     | 0.8   |
| Other                                    | 3     | 0.6   |
| Relationship status                      |       |       |
| Single, not in a committed relationship  | 116   | 22.6  |
| In a committed relationship, not married | 215   | 41.9  |
| Married                                  | 115   | 22.4  |
| Dating, not in a committed relationship  | 58    | 11.3  |
| Divorced                                 | 8     | 1.6   |
| Most common relationship style           |       |       |
| Monogamous                               | 471   | 91.8  |
| Polyamorous                              | 26    | 5.1   |
| Swinger                                  | 9     | 1.8   |
| Other                                    | 6     | 1.2   |
| Sample recruited from                    |       |       |
| Amazon Mechanical Turk                   | 300   | 58.4  |
| University sample                        | 213   | 41.5  |

## Results

### Preliminary analyses

For preliminary analyses, we examined our sample characteristics and the occurrence rates of BDSM experience. Sample characteristics are displayed in Table 1, and Table 2 shows the frequency analysis performed for each measure. As shown in Table 2, regardless of the measure employed, most individuals had at least some knowledge of and/or participation in BDSM activities. With regard to the activities, participants were least likely to indicate that they had participated in public scenes and that they had kink-only partners.

As the MTurk sample was significantly older than the university sample ( $P < .05$ ), we also conducted correlational analyses between age and our variables of interest. As compared with younger participants, older participants had significantly more sexual partners, had more knowledge of the BDSM/kink lifestyle, were interested in and involved with BDSM/kink longer, and had participated in more scenes in public and private spaces (all  $P < .016$ ). Meanwhile, younger participants reported more kink-only partners (with whom they had done BDSM activities but not had sex). Regarding marking behaviors, the correlation between frequency of marks accidentally inflicted and age just reached significance ( $r = 0.11$ ,  $P = .039$ ), with older participants reporting more marks. Notably, age was not related to any other marking behavior or frequency of engagement in BDSM/kink.

### Occurrence of marking behaviors

A frequency analysis was performed to address RQ1, related to the occurrence of intentional and unintentional

**Table 2.** Frequencies of different measures for BDSM experience.<sup>a</sup>

| Engagement in BDSM / kink | Knowledge of BDSM / kink | Length of interest in BDSM / kink | Length of involvement in BDSM / kink | No. of scenes | Public | Private | No. of partners | Sexual BDSM | Kink only |
|---------------------------|--------------------------|-----------------------------------|--------------------------------------|---------------|--------|---------|-----------------|-------------|-----------|
| Never                     | 24.8                     | 6.8                               | 22.9                                 | None          | 71.2   | 16.9    | None            | 7.0         | 52.7      |
| Rarely                    | 25.7                     | 13.0                              | 22.9                                 | 1-2           | 15.3   | 20.5    | 1               | 19.2        | 27.1      |
| Occasionally              | 34.7                     | 29.1                              | 16.4                                 | 3-10          | 10.9   | 30.9    | 2-3             | 23.9        | 14.8      |
| Frequently                | 13.5                     | 34.2                              | 18.4                                 | 11-15         | 1.0    | 5.2     | 4-10            | 28.2        | 5.0       |
| Daily                     | 1.4                      | 16.9                              | 19.5                                 | ≥16           | 1.6    | 26.5    | ≥11             | 21.7        | 0.4       |

<sup>a</sup> Data are presented as percentages.



**Table 3.** Frequency with which different mark types are consented to, avoided, intentionally inflicted, and accidentally inflicted.<sup>a</sup>

|                      | Consent to marks | Avoidance of marks | Intentionally inflicted marks | Accidentally inflicted marks |
|----------------------|------------------|--------------------|-------------------------------|------------------------------|
| Bruises              | 58.8             | 48.9               | 36.7                          | 56.5                         |
| Broken bones         | 5.4              | 53.3               | 5.7                           | 5.7                          |
| Cuts/abrasions       | 21.0             | 53.8               | 16.4                          | 21.7                         |
| Inflammation         | 27.0             | 49.9               | 14.4                          | 21.8                         |
| Minor burns          | 15.0             | 50.8               | 8.7                           | 11.7                         |
| Circulation problems | 12.7             | 50.3               | 7.9                           | 12.0                         |
| Aching joints        | 27.0             | 50.7               | 11.7                          | 23.1                         |
| Welts                | 28.4             | 51.9               | 18.0                          | 22.1                         |
| Any serious wounds   | 6.5              | 52.4               | 4.9                           | 5.4                          |
| Piercings            | 8.4              | 50.3               | 7.1                           | 6.0                          |
| Sprains              | 11.4             | 49.7               | 5.4                           | 10.1                         |
| Other <sup>b</sup>   | 5.6              | 35.6               | 4.9                           | 4.4                          |

<sup>a</sup>Data represent the percentage of individuals who indicated that they engaged in the behavior more than never. <sup>b</sup>The “other” category included marks such as bites, hickeys, scratch marks, rawness, and cramps.

**Table 4.** Largest unintentional marks received as noted in qualitative comments: type of mark and place on the body.<sup>a</sup>

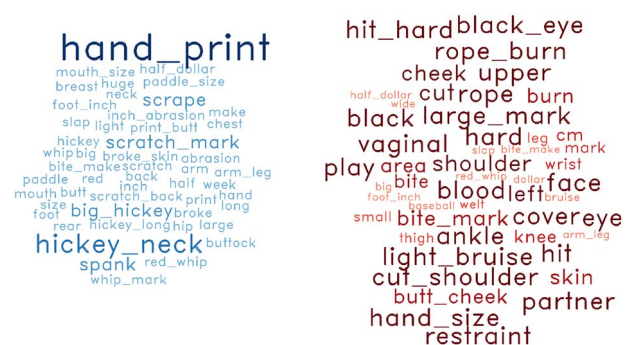
| Place on body                          | Mark type (No.)  |
|--|--|
| Butt                                   | Bruise (6), cut, (2), welts (5), impact mark (2), not specified or other (1)   |
| Neck                                   | Bruise (5), not specified or other (1), abrasion/scrape (1), bite marks (1)  |
| Hips                                   | Bruise (2), not specified or other (1), cut (1)  |
| Back                                   | Bruise (2), not specified or other (2), cut (2), scratch (1), welt (1)   |
| Arm                                    | Bruise (8), not specified or other (2), blister (1), cut (3), bite marks (3), abrasion/scrape (2), welt (1), sprain (1)  |
| Leg                                    | Bruise (12), not specified or other (5), bite marks (1), abrasion/scrape (2), welt (1)                                   |
| Breast/chest                           | Bruise (4)   |
| Torso                                  | Bruise (1), broken bone (1)  |
| Collarbone                             | Not applicable   |
| Head                                   | Bruise (2), not specified or other (2), bite marks (1), broken blood vessels (1), inflammation (1)                       |
| Genitals/anus                          | Bruise (1), not specified or other (2), inflammation (1)   |
| Eye                                    | Bruise (3), swollen (1)  |
| Mouth/tongue                           | Not applicable   |
| General body/vague mention of all over | Bruise (3), welt (1)   |
| Unspecified                            | Bruise (4), not specified or other (4), bite marks (2), broken blood vessels (2), scratch (1), welt (1), impact mark (1) |

<sup>a</sup>A total of 103 comments were coded.

infliction of marks and marking expectation and consent behaviors. As shown in Table 3, the most commonly inflicted and expected/consented-to marks within our sample were bruises, cuts/abrasions, aching joints, welts, and inflammation.

Additionally, analysis of the qualitative comments showed that the most common areas for the largest marks received (intentional and unintentional) were the butt, arms, back, legs, head (which includes the face), and neck, and these marks were most likely to be bruises, scratches, welts, abrasion-s/scrapes, and other impact marks (Tables 4 and 5). Other descriptive words in their comments were size related (ranging from “small” to “4-6 inches long” or “the size of a baseball”) and the implement used to inflict the mark (eg, “from the whip and chain,” “paddle size,” and “hand print”).

Relative risk ratios were used to identify concepts that were most differentially associated with intentional vs unintentional marks received (Figure 1). In general, words most strongly associated with intentional marks were those involving areas that are typically covered (*butt*, *breast*, *chest*), whereas those associated with unintentional marks included more difficult-to-conceal, as well as more sensitive, body regions (*face*, *cheek*, *vagina*). Additionally, unintentional marks were associated with words implying greater severity



**Figure 1.** The top 50 most diagnostic words for marks that were received intentionally (left) vs unintentionally (right). Note that bigrams are linked with underscores ( \_ ) and that word/phrase size is proportionate to the relative risk scores for each n-gram.

of injury, such as *blood* and *large mark*, whereas intentional marks were associated with generally less severe injury terms, such as *scrape* and *scratch*.

### BDSM experience and markings

Regarding RQ<sub>2</sub>, on average, participants reported participating in BDSM rarely to occasionally, having limited to some

**Table 5.** Largest intentional marks received as noted in qualitative comments: type of mark and place on the body.<sup>a</sup>

| Place on body                          | Mark type (No.)  |
|--|--|
| Butt                                   | Bruise (11), impact mark (10), welt (3), not specified or other (2), abrasion/scrape (1)                           |
| Neck                                   | Bruise (9), broken blood vessels (5), choke mark (1), not specified or other (2), abrasion/scrape (1)              |
| Hips                                   | Bruise (2), cut (1), not specified or other (3)  |
| Back                                   | Bruise (4), scratch (6), welt (2), impact mark (1), abrasion/scrape (1), not specified or other (1)                |
| Arm                                    | Bruise (6), scratch (1), welt (1), not specified or other (3), bite marks (1)                                      |
| Leg                                    | Bruise (6), cut (1), bite marks (2), welt (2), not specified or other (3)  |
| Breast/chest                           | Bruise (3), broken blood vessels (3), not specified or other (2), abrasion/scrape (1)                              |
| Torso                                  | Bruise (2)   |
| Collarbone                             | Broken blood vessels (1), cut (1)  |
| Head                                   | Not specified or other (1)   |
| Genitals/anus                          | Not applicable   |
| Eye                                    | Not applicable   |
| Mouth/tongue                           | Not applicable   |
| General body/vague mention of all over | Bruise (2)   |
| Unspecified                            | Bruise (4), not specified or other (3), broken blood vessels (1), scratch (1), burn (1), welt (3), impact mark (3) |

<sup>a</sup>A total of 104 comments were coded.

**Table 6.** BDSM and marking measures: means, SDs, and bivariate correlations.<sup>a</sup>

|                                   | 1      | 2      | 3      | 4      | 5      | 6      | 7     | 8     | 9      | 10    | 11     | 12    | 13   |
|-----------------------------------|--------|--------|--------|--------|--------|--------|-------|-------|--------|-------|--------|-------|------|
| 1. Frequency of BDSM engagement   | —      |        |        |        |        |        |       |       |        |       |        |       |      |
| 2. BDSM knowledge                 | 0.44** | —      |        |        |        |        |       |       |        |       |        |       |      |
| 3. BDSM interest                  | 0.15** | 0.30** | —      |        |        |        |       |       |        |       |        |       |      |
| 4. Involvement in BDSM            | 0.18** | 0.28** | 0.84** | —      |        |        |       |       |        |       |        |       |      |
| 5. No. of public BDSM scenes      | 0.17** | 0.33** | 0.16** | 0.13** | —      |        |       |       |        |       |        |       |      |
| 6. No. of private BDSM scenes     | 0.28** | 0.27** | 0.38** | 0.46** | 0.20** | —      |       |       |        |       |        |       |      |
| 7. No. of BDSM sexual partners    | 0.08   | 0.18** | 0.47** | 0.16** | 0.21** | 0.11** | —     |       |        |       |        |       |      |
| 8. No. of kink-only partners      | 0.23** | 0.14** | 0.00   | -0.03  | 0.07   | -0.02  | 0.11* | —     |        |       |        |       |      |
| 9. Consent to marks               | 0.22** | 0.22** | 0.07   | 0.05   | 0.31** | 0.12*  | 0.07  | 0.09  | —      |       |        |       |      |
| 10. Avoidance of marks            | -0.03  | 0.05   | -0.03  | -0.04  | -0.08  | -0.07  | -0.04 | -0.03 | -0.01  | —     |        |       |      |
| 11. Intentionally inflicted marks | 0.13*  | 0.16** | 0.02   | 0.01   | 0.20** | 0.09   | 0.06  | 0.09  | 0.80** | 0.04  | —      |       |      |
| 12. Accidentally inflicted marks  | 0.12*  | 0.19** | 0.03   | 0.06   | 0.25** | 0.09   | 0.04  | 0.10  | 0.76** | 0.06  | 0.83** | —     |      |
| 13. Use of safe words             | 0.35** | 0.30** | 0.13*  | 0.14** | 0.11*  | 0.16** | 0.05  | 0.11* | 0.14** | 0.12* | 0.07   | 0.11* | —    |
| Mean                              | 1.41   | 2.43   | 45.59  | 33.53  | 1.27   | 23.62  | 9.98  | 0.95  | 0.34   | 1.70  | 0.22   | 0.34  | 1.32 |
| SD                                | 1.04   | 1.14   | 81.37  | 64.89  | 3.45   | 55.00  | 30.52 | 1.71  | 0.52   | 1.69  | 0.48   | 0.54  | 1.42 |

<sup>a</sup>n = 368-513. \*P < .05. \*\*P < .01.

knowledge of the BDSM lifestyle, having been interested in BDSM for about 43 months and involved in it for 32 months, participating in approximately 2 public scenes and 61 private scenes, and having approximately 10 BDSM sex partners and 2 kink-only (nonsex) partners.

Using bivariate correlations, we examined how our BDSM experience measures were associated with BDSM marking behaviors (Table 6). Notably, the experience-related variables were all highly correlated, with the exception of length of involvement in BDSM and the number of public BDSM scenes. However, the BDSM measures showed different associations with the mark variables. Specifically, frequency of BDSM engagement was significantly related only to the frequency with which individuals communicated consent to receive certain types of marks. BDSM knowledge, number of public scenes, and number of kink-only partners were related to expectations/consent to marks and the frequency of intentionally and accidentally inflicting marks. Length of BDSM interest (in months) was negatively associated with the frequency of intentionally inflicting marks. Finally, length of involvement in BDSM (in months), number of private BDSM scenes, and number of BDSM sexual partners were not significantly related to any mark variables.

### H<sub>1</sub>: Use of safe words and previous BDSM experience

Bivariate correlations were performed to analyze the association between the frequency of use of safe words and BDSM experience (Table 6). The results supported H<sub>1</sub>: nearly all variables measuring participants' experience with BDSM (with the exception of number of private scenes) were positively associated with the use of safe words.

### H<sub>2</sub>: Use of safe words and unintentional marking

Bivariate correlations were performed to analyze the association between the frequency of use of safe words and inflicting unintentional marks (Table 5). There was a positive association between the use of safe words and accidentally inflicting marks, which contradicted H<sub>2</sub>.

## Discussion

Although BDSM appears to be growing in mainstream popularity, there are many gaps in the research literature regarding what we know about individuals' BDSM and wider kink experiences and the potential for these behaviors to result in

physical marks and injuries. Practitioners of BDSM often face tremendous stigma and negative press.<sup>3,9,10</sup> Such negative evaluations of the kink community often deter individuals from admitting interest in such practices<sup>30</sup> and can prevent them from reporting injuries to health providers.<sup>20</sup> Certainly, nuances exist, and it may be that BDSM experience varies by how participation is measured (eg, time in practice, number of partners, number of scenes). Such findings highlight the challenge of capturing the prevalence of BDSM activities in a general population. The present exploratory study expanded on the research on BDSM by examining various aspects of practitioners' experiences and the associations among previous BDSM experience, marking behaviors, and use of safe words.

The majority of participants reported at least some knowledge of, as well as participation in, BDSM/kink activities. However, participation in public scenes and having kink-only (nonsexual) partners were much rarer. These findings support and extend the existing literature. For instance, multiple studies found that many people are interested and have participated in BDSM without identifying as a member of the kink community.<sup>1,18,31</sup> These studies of general populations in the Western world (ie, Canada, Belgium, United States<sup>18,32</sup>) have also found that many individuals have proclivities toward, are interested in, have fantasies about, or participate in BDSM. Adding to these findings, >77% of the adults in our convenience sample (college students and adults from an online sample) had some experience with BDSM, and 94% reported having knowledge of BDSM beyond being "new to the lifestyle." Hence, BDSM appears to be somewhat mainstream in practice and not limited to those who align themselves with the BDSM/kink community.

One notable contribution of this work is our use of multiple measures for capturing BDSM experience. We expanded the measure of BDSM by providing a definition that reflected a continuum from light spanking and bondage to scripted role play, questions about the number of partners and number of scenes, and questions about the length of interest and involvement in BDSM. Considering that these various measures were associated with marking behaviors in different ways, it is probable that they are capturing different levels or aspects of experience. In short, each measure gives a slightly different angle of BDSM/kink participation. Future studies should include multiple measures, and a standardized measure capturing multiple aspects of BDSM experience should be a goal of this future research. Moreover, we suggest that researchers consider how their provided frames and definitions may shape how individuals respond and/or self-identify. For example, acts such as spanking, hair pulling, and choking may be considered BDSM, but they have also been framed as rough sex in the research literature, with many adults indicating that they have participated in these types of activities—including 4 in 5 young adults in a current relationship in the university probability sample of Herbenick et al<sup>33</sup> and half of those in the online MTurk convenience sample of Vogels and Sullivan.<sup>34</sup> Additionally, many participants in the university sample of Boyd-Rogers et al<sup>35</sup> indicated a proclivity toward BDSM. Thus, there may not be a strict distinction between BDSM and other types of sexual activities but rather a continuum from vanilla sex to strict BDSM, with rough sex or "light" BDSM falling somewhere in between. It may therefore be useful for researchers to ask about specific types of acts, implements, and marks rather than to characterize

behaviors as belonging to any specific category of sexual activity (ie, BDSM/kink, vanilla sex, or rough sex).

Regarding the occurrence of marking behaviors, previous studies identified consensual marking behaviors as features of BDSM.<sup>6,8</sup> As markings may serve various interpersonal and intrarelational functions, such as eliciting aftercare, or even social functions, as a badge of pride or accomplishment for some community members,<sup>6</sup> the scientific examination of marking behaviors is an important step in providing context to this behavior. However, previous research has left little understanding about actual marking behaviors (ie, places on the body and types of marks) and the communication that takes place regarding such markings. Our results revealed that the most consented-to and inflicted marks were bruises, cuts/abrasions, aching joints, welts, and inflammation. Additionally, similar types of marks (ie, bruises, scratches, welts, abrasions/scrapes, and other impact marks) were the largest ones that most individuals reported receiving, intentionally and unintentionally. As the stigma surrounding BDSM often portrays kink activities as dangerous and potentially deadly,<sup>3,9,10</sup> these findings show that many commonly practiced marking behaviors are relatively safe and can be performed without the risk of serious injury. Moreover, as we conducted our study with a general population sample and asked about marks inflicted and received from any type of play, our results related to marks are not limited to those sustained in BDSM scenes and may include those sustained in vanilla or rough sex. Again, this highlights the continuum that exists between vanilla sex and strict BDSM and emphasizes the importance of asking about marking behaviors in general ways rather than tying them to specific sexual practices or identities.

With limited studies exploring marking behaviors,<sup>6,8</sup> another goal of this research was to examine the extent to which BDSM experience related to purposeful marking behaviors. Here we found that most of the BDSM experience and engagement variables were positively and significantly related to expectations of/consent to marks and inflicting intentional and unintentional marks. An exception was that BDSM interest was negatively related to intentional infliction of marks, a finding that may have emerged because the interest measure captures a wide cohort (which does not overlap entirely with engagement) and those interested in BDSM for a long time may not actually be inflicting intentional marks on partners. Interestingly, frequency of BDSM engagement was significantly related only to the frequency with which individuals expected and/or communicated consent to receive certain types of marks, which suggests that practitioners develop more realistic expectations or better communication skills as they gain more experience with BDSM/kink behaviors. Positive correlations between the other experience variables and marking behaviors suggest that marking behaviors may develop or become more common with BDSM experience. For example, new practitioners may prefer to avoid marking behaviors until they are more experienced within the BDSM/kink community. One reason for this may be to avoid accidentally inflicting marks or harming their partners, or, absent of discussions about what is and is not permissible, they may not know their partners' limits regarding marks. Alternatively (or additionally), as practitioners gain more experience with BDSM, they may continue to push boundaries or heighten the intensity of the scene or extent of aftercare needed. This latter explanation

aligns with several of the driving factors of BDSM experiences, specifically, the power exchange between partners and the suspension or rejection of societal expectations and norms.

Finally, the results revealed that all variables measuring participants' experience with BDSM (with the exception of number of private scenes) were positively associated with the use of safe words. These findings supported  $H_1$ , which proposed that the use of safe words is positively associated with BDSM experience, and previous research showing that safe words are a common practice within the BDSM subculture.<sup>8</sup> In other words, as individuals gain more experience with the BDSM/kink culture, they are more likely to implement safe words, presumably to help promote safety and the consensual nature of the interaction. Yet, there was a positive association between the use of safe words and accidentally inflicting marks, which did not support  $H_2$ . Apparently, safe words may lessen the likelihood of intentional markings, but they do not necessarily prevent accidents within BDSM play. Perhaps having safe words means that practitioners may push boundaries somewhat, knowing that there is an agreed-on exit word if activities become too intense. Alternatively (or additionally), more experienced practitioners may just be engaging in a wider range of greater-intensity BDSM activities, which may accumulate more accidental markings. These are avenues for future research.

Overall, the findings of this study suggest that the majority of a general population sample had at least some knowledge and experience with BDSM, which highlights the necessity of a better understanding of BDSM/kink behaviors for those in education, health care, public policy, and the law. For instance, sexual education counselors may consider expanding their topics covered to include safe practices within BDSM/kink scenes (eg, use of safe words and affirmative consent). Additionally, those in health care and investigators could be trained to assess these marks with appropriate probes that are respectful and sensitive to the individual's sexuality (eg, "What was the implement used to inflict this mark?" "Was this mark or injury sustained during a consensual experience?"). Our findings revealed that the most common types of marking behaviors are often relatively benign (eg, bruises, scratches, welts, abrasions/scrapes, and other impact marks) and not severe (eg, broken bones); however, the severity of bruising and other impact marks was not assessed. Our findings also revealed the role that BDSM experience plays in marking behaviors, with individuals participating in more marking behaviors and the use of safe words as their experience grows. Yet, in all cases, it would be difficult for observers to ascertain which marks or injuries were a result of a consensual or nonconsensual experience. As such, more open conversations about sexual marking behaviors may prevent active BDSM practitioners from being misclassified as abuse perpetrators or victims. This is especially relevant within legal systems, where triers of fact must sometimes examine physical evidence (eg, photographs of bruises) or hear testimony about physical behaviors and make the determination of whether a defendant is guilty of intentional abuse.

### Limitations and future directions

The findings from this exploratory study and its limitations present opportunities for future research. First, our sample was a convenience sample of the general population, self-selected into a study examining sexual practices, and consisted

of a large cohort of young adult college students. Though we were able to recruit a diverse sample through the simultaneous use of MTurk for data collection, it could be that individuals who completed the survey were younger or more sexually or BDSM oriented than those in the general population; thus, our results may not be generalizable to all populations. Second, our scope was limited to the association between BDSM experience and various marking behaviors and injuries in this general population, and more research is needed to further understand those who identify as BDSM practitioners, who may face the loss of job opportunities, misdiagnosis of mental disorders, and other forms of discrimination.<sup>35</sup> We were able to obtain detailed data through online surveys; however, interviews with BDSM practitioners recruited through FetLife, for example, may offer richer responses regarding use of safe words (or gestures) and ambivalence surrounding marking behaviors. Finally, we had limitations in our measures. For example, our measure of "consent to marks" included expectations of and consent to marking behaviors. Though we chose this wording to capture the nuance of consent (eg, consenting to an act with the expectation of a mark), we see value in explicating the various ways in which implicit and explicit consent for marking behaviors are communicated. Additionally, our open-ended response option for largest marks received did not systematically ask about specific marks or body parts, and our consent measure asked only about safe words (not gestures or other types of risk reduction measures). Researchers could build on our initial findings regarding marking behaviors by exploring the various stages of BDSM experience and how practitioners communicate their desire for safe words or gestures, marking behaviors, and so forth. Such an understanding could further our understanding of BDSM practices and offer practical application of such knowledge.

### Conclusion

The current study highlighted the occurrence of BDSM in a general population through a variety of measures to capture and define the extent of experience (ie, number of partners, number of scenes, length of interest, and involvement). Our findings revealed the role that BDSM experience plays in marking behaviors, with individuals participating in more marking behaviors and use of safe words as their experience grows. Ultimately, this exploratory study's findings may be able to help researchers, educators, and health care practitioners have a better understanding of the BDSM community and their marking behaviors so that they can best develop programming for and assist those who engage in BDSM/kink practices.

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