ABSTRACT

Introduction: Studies on characteristics of self-referred men with sexual interest in minors (SIM) and treatment approaches in this group of patients are still relatively rare.

Aim: The aim of this exploratory pilot study was to investigate hypersexuality and impulsivity as 2 dynamic risk factors that could possibly change during treatment in self-referred men with SIM.

Methods: Data were collected at the “Kein Täter Werden (means: not become an offender)” network site in Hamburg. Using self-report questionnaires, the extent of hypersexuality and impulsivity was analyzed with the samples’ pretreatment data via descriptive statistics and compared with nonclinical samples of other studies. The relation between hypersexuality and impulsivity was analyzed via Spearman’s correlation coefficient with pretreatment data ($N = 77$). Intragroup analysis compared hypersexuality and impulsivity from pre- and posttreatment ($n = 29$).

Main Outcome Measures: Hypersexual Behavior Inventory and Barratt Impulsiveness Scale Version 11.

Results: The degree of generalized impulsivity in the SIM group was comparable to that in nonclinical samples while the degree of hypersexuality was considerably higher than in nonclinical samples. Sixty-four percent of the participants were in the range of clinically relevant hypersexuality. Impulsivity and hypersexuality were weakly positively correlated with each other. During treatment hypersexuality significantly decreased while impulsivity did not differ significantly between before beginning treatment and after (partial) completion.

Conclusion: Hypersexuality, but not impulsivity, was pronounced in the group of self-referred men with SIM and should be targeted in treatment. In order to improve treatment outcome regarding risk reduction in self-referred men with SIM, a focus on treatment approaches that were developed to treat hypersexuality can be expected to be effective while focusing on generalized impulsivity may be less relevant. Lampalzer U, Tozdan S, von Franqué F, et al. Hypersexuality and Impulsivity in Self-Referred Men With Sexual Interest in Minors: Are They Related? Do They Change During Treatment? An Exploratory Pilot Study. Sex Med 2021;9:100429.

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Key Words: Hypersexuality; Impulsivity; Pedophilia; Prevention of Child Sexual Abuse; Psychotherapy

INTRODUCTION

In an online survey of 8,718 German males, 4.1% of the participants reported sexual fantasies with children and 3.2% indicated they had perpetrated offenses against prepubescent children. However, prevalence estimations of pedophilic disorder in this study only revealed <0.1% for the exclusive type and 0.6% for the nonexclusive type. The German network “Kein Täter werden (means: not become an offender)” targets people who seek therapeutic help because they have a sexual interest in minors (SIM) and suffer from it or are at risk of (re-)offending.

The reduction of dynamic risk factors is a central therapeutic goal in the treatment of people who have committed sexual offenses. Concerning risk reduction, impulsivity and hypersexuality are risk factors that are particularly challenging in combination with pedophilia. Reducing impulsivity and hypersexuality is also seen as a therapeutic goal for men with pedophilic tendencies from...
Hypersexuality and Impulsivity in Men With SIM

Current research findings give an inconsistent picture on hypersexuality in men with SIM. In a Finish population-based sample, sexual interest in children was associated with higher levels of general sexual desire, a higher frequency of sexual fantasies, as well as more frequent masturbation. This might indicate that men with SIM are more prone to symptoms of hypersexuality than men without SIM.

Other research shows that men with pedophilia who commit sexual offenses show lower levels of self-efficacy for controlling sexual urges than men with pedophilia who do not commit sexual offenses. Furthermore, minor-attracted persons with a history of sexual activity with children have greater difficulty controlling their pedophilic attraction than minor-attracted persons without a history of sexual activity with children. These findings might indicate that men with pedophilia who do not commit sexual offenses are less prone to symptoms of hypersexuality than men with pedophilia who commit sexual offenses. However, this is contradictory to research showing that men with pedophilia who had not committed “hands-on” offenses, but had consumed material depicting the sexual exploitation of children, or so-called indicative pictures, are more likely to have problems with sexual preoccupation and sexual self-regulation than men with contact sex offenses against children. Findings in a sample representative of the German male population indicate that frequent pornography consumption and a wide-spread interest in all kinds of pornography can be interpreted as indications of sex drive, and that men who frequently consume pornography have an increased risk of encountering child pornography. A study that differentiated between pedophilic men with and without a history of child sexual offending and men with a history of child sexual offending without pedophilia, found a lower sex drive in the 2 groups with sexual offenses. However, this result might be due to a tendency for socially desirable responses by the convicted men who were in prison.

Findings on impulsivity in men with SIM are more consistent. They indicate that men who have committed a sexual offense against children show more signs of impulsivity than controls, but that they have no predominating impulsive personality traits and are more prone to cluster A pathology than to cluster B pathology. Moreover, they indicate that men with pedophilia who commit sexual offenses seem to be better characterized by aberrant sexual arousal than by features related to impulsive-aggression. Neuropsychological research shows that impairments of men with pedophilia, who have been convicted of a sexual offense against a child, are rather due to processing difficulties than to cognitive impulsivity, that is, longer response latencies rather than short ones. In a go/no-go task men with pedophilia without a history of sexual offending against children showed more elaborated self-control abilities and a less impulsive response style compared to men with pedophilia with a history of sexual offending against children.

A study that differentiated between men who had been convicted of sexual offending against children and who had not been convicted of sexual offending against children revealed no significant differences between these 2 groups regarding impulsiveness. One study, however, that differentiated between men with pedophilia who had committed sexual offenses and who had not committed sexual offenses, found higher impulsiveness in those men who had committed sexual offenses. Another study found 2 clusters of male individuals who had committed a sexual offense against children: The cluster with higher impulsiveness was more likely to have stronger pedophilic interests. In a sample of men who were convicted of child abuse, Carvalho found that neither motor-planning impulsiveness nor cognitive impulsiveness significantly predicted pedophilic sexual interest. Hence, impulsivity does not seem to be a typical characteristic of men with SIM, or at least only of a subgroup.

Studies with samples of males with hypersexual / sexually compulsive males indicate elevated rates of impulsivity in these individuals compared to healthy controls according to self-report measures. Moreover, research with highly sexually active gay and bisexual men, as well as a community sample, indicates a weak or moderate association between impulsivity and hypersexuality. Hence, for the subgroup of men with both SIM and hypersexual / compulsive sexual behavior, it might hold true that rates of impulsivity are elevated.

The Relationship Between Impulsivity and Hypersexuality

With regard to hypersexuality there is a controversy around how best to classify hypersexual behavior. One proposal is the classification as impulsive sexual behavior. However, the classification as sexual addiction or compulsive sexual behavior is also discussed. The impulsivity model proposes that hypersexual behavior may represent a failure to resist a sexual activity impulse due to the failure to resist sexual drive and the incapability to delay gratification. This model is criticized because many hypersexual individuals thoroughly plan their sexual activities and because impulsivity and compulsivity both at the same time, and not separately, characterize hypersexuality. The compulsivity model highlights that both hypersexuality and obsessive-compulsive disorder are characterized by repetitive and intrusive thoughts as well as repetition of experiences. The addiction model highlights that clinical features of hypersexuality correspond to the
diagnostic criteria for an addictive disorder, for example, an increase of sexual activity over time, and difficulties to terminate or decrease the sexual activities.35

In the ICD-11, compulsive sexual behavior disorder (as a clinically relevant form of hypersexuality) is included in the group of impulse control disorders on the grounds that there is no definitive information yet on whether there is an equivalence to processes involved in substance use disorders, gambling and gaming.36,37 Hypersexuality was discussed, but then rejected by the American Psychiatric Association as a diagnosis for DSM-5.38

A current empirical study shows that a diagnosis of compulsive sexual behavior disorder more likely had a comorbidity with other mood, obsessive-compulsive, and impulse-control disorders, but not with substance use or addictive behavior disorders.39 Another study indicates that impulsivity has a stronger relationship with hypersexuality than compulsivity does.40 More research with convincing empirical support is needed in order to determine the most suitable classification of hypersexuality.37,41

Psychotherapeutic Treatment of Hypersexuality and Impulsivity

Unlike hypersexuality that allows for an independent diagnosis per se, impulsivity is a symptom that is common in many mental disorders. Hence, treatment programs that address impulsivity are most often developed for specific mental disorders that are not only characterized by elevated impulsiveness, but also other characteristics, that is, they do not address impulsivity alone. However, some treatment approaches explicitly target impulsivity. For example, there is empirical evidence that cognitive-behavioral treatment for impulsivity,42,43 components of acceptance and commitment therapy,44,45 and Dialectical Behavior Therapy—Corrections Modified skills treatment groups46 reduce impulsivity. More generally, insight-oriented psychotherapy, cognitive-behavioral therapy, dialectic behavior therapy, contingency management, and emotion regulation are described as psychotherapeutic treatment approaches of impulsivity.47,48 Transference-focused psychotherapy has also proven to reduce impulsivity.49,50

Central mental disorders characterized by impulsivity are attention-deficit/hyperactivity disorder, antisocial personality and borderline personality disorder, substance abuse/dependence, bipolar disorder, and impulse control disorders.48 Several treatment approaches have proven to be successful for single or several of these disorders, for example, mindfulness training,49 cognitive-behavioral group therapy,51–53 dialectic behavior therapy, and mentalization-based therapy.54 Preliminary findings indicate a decrease of recidivism in forensic patients with antisocial, borderline, narcissistic, or paranoid personality disorders treated with schema therapy.55

For individuals with hypersexuality, several treatment approaches have been outlined.56 Blyck and Potenza,57 for example, propose a Mindful Model of Sexual Health with an emphasis on awareness of interoceptive processes through mind-body connection. Braun-Havey and Vigorito’s58 treatment approach incorporates findings from research on motivational interviewing and readiness-for-change, and advocates sexual health principles. In a summary of treatment approaches, many different ways of treatment are enumerated that are derived from addiction treatment, for example, “dialectical behavioral techniques to manage cravings, relapse prevention strategies, (. . .) referral to appropriate 12-step based recovery groups”59 (p. 85). In addition to psychotherapy, pharmacological treatment is widely described as helpful in the context of hypersexuality.36,59

However, empirical studies on the effectiveness of specific treatment programs for hypersexuality are rare or contain significant methodological limitations, such as a lack of rigorous research designs, lack of consistency, and accurate description of the treatments, respectively.60,61 However, Hallberg et al.62,63 conducted 2 studies, one of them a randomized controlled study, with men with hypersexual disorder who took part in a cognitive-behavioral therapy group program. They found that hypersexual disorder symptoms significantly decreased during the course of therapy and that these effects were maintained at 3- and 6-month follow-ups.62,63 Using a pretest-posttest group design, Kjellgren64 found that in a sample of 27 males and one female seeking help with hypersexual behavior, mental health was significantly improved and hypersexual behavior reportedly reduced after treatment, that is, on average at 10-month follow-up. Treatment was provided by social workers who were trained in therapy and sexology and was mainly based on psychodynamic, cognitive-behavioral, and system-based therapeutic approaches. Further research is needed in order to provide miscellaneous evidence-based treatment approaches for hypersexuality.

The Present Study

As described above, the difficulties of how to define impulsivity and the controversy on how to classify hypersexuality are still ongoing.35 There is research on both hypersexuality and impulsivity in men with SIM, but mainly only those who have committed offenses.16,18 Psychotherapy research investigates hypersexuality mainly in the context of cognitive-behavioral therapy.61–65 Psychotherapy of impulsivity is mainly investigated in the context of disorders such as attention deficit hyperactivity disorder (ADHD), substance abuse, impulse control disorders as included in DSM-IV, borderline personality disorder, and antisocial personality disorder, or in the context of mixed diagnoses.64,67 To our knowledge, there is no empirical research on how hypersexuality and impulsivity are interlinked in self-referred men with SIM and only one study9 analyzes how they are influenced by psychotherapy in this group of patients. Therefore, this exploratory pilot study aims to investigate three research questions:

(1) Are impulsivity and hypersexuality characteristics that are particularly pronounced in men with SIM?
(2) Is there a relationship between impulsivity and hypersexuality in men with SIM?
(3) To what extent do impulsivity and hypersexuality change in men with SIM before and after the (partial) completion of psychotherapeutic treatment? Does hypersexuality change to a different extent in men with SIM who solely receive psychotherapeutic treatment in comparison to men with SIM who receive medication in addition to psychotherapy?

METHODS

Participants

This exploratory pilot study included 79 adult men with SIM who underwent initial diagnostic procedures between autumn 2011 and summer 2019 and then started treatment at the Institute for Sex Research, Sexual Medicine and Forensic Psychiatry. All of them had given their informed consent. Twelve men who had not given their informed consent were not included in the sample. The study was approved by the Ethics Committee of the Chamber of Psychotherapists Hamburg (09/2019-PTK-HH, 02/2015-PTK-HH). Data were prepared and analyzed by 2 researchers (U.L. and S.T.) who work in the research unit of the institute, and were not involved in the processes of treatment indication or psychotherapeutic care.

Table 1 shows the demographic characteristics of the participants. All men fulfilled the following criteria required for participation in the psychotherapeutic treatment program offered by the Prevention Network “Kein Täter werden (means: not become an offender)”: 

- not (yet) having offended and/or never having consumed child sexual abuse images, though fearing doing so, or
- already having offended and/or having consumed child sexual abuse images, but not being known to the legal system, or
- previously having been charged with and/or found guilty of relevant offenses and having fully served any sentence received as a result, and fearing committing further offenses.

Men with mental retardation and/or other severe disorders, that is, psychotic symptoms, obsessive-compulsive symptoms, self-harming behavior, and suicidal thoughts, were not included in the treatment program.

Before beginning the treatment program, every participant underwent an initial diagnostic procedure, that is, diagnostic interviews, a risk assessment, and a comprehensive battery of self-report questionnaires. Subsequently, referral for group vs individual treatment was discussed and decided within the whole therapeutic team (medical doctors and psychologists), based on the information given by the therapist who was responsible for the initial diagnostic procedure.

The treatment program at the Institute for Sex Research, Sexual Medicine and Forensic Psychiatry offers 90 minutes of group treatment led by 2 group therapists weekly, or individual treatment sessions every 1 or 2 weeks. The treatment approach is based on the risk-need-responsivity model: (i) Treatment intensity is adapted to risk of (re-)offending. (ii) Treatment is focused on the main needs, that is, the 3 main dynamic risk factors that cause the individual’smodifiable risk of (re-)offending, for example, in the realm of relationship problems, or criminogenic cognitions. (iii) Referral to group vs individual treatment, choice of

**Table 1. Sample characteristics for the total sample (N = 77) when undergoing initial diagnostic procedure**

| Variables | Total (N = 77, 100%) |
|-----------|---------------------|
| **Education level** | |
| Less than 10 years | 14 | 18.2 |
| More than 10 years | 63 | 81.8 |
| **Employed** | |
| Yes | 61 | 79.2 |
| No | 16 | 20.8 |
| **Relationship status** | |
| In a relationship | 38 | 49.4 |
| Currently single | 39 | 50.6 |
| **Living alone** | |
| Yes | 37 | 48.1 |
| No | 40 | 51.9 |
| **Own children** | |
| Yes | 18 | 23.4 |
| No | 59 | 76.6 |
| **Self-reported exclusiveness (Interest is . . .)** | |
| . . . exclusively in children | 11 | 14.3 |
| . . . not exclusively in children | 65 | 84.4 |
| . . . not specified | 1 | 1.3 |
| **Self-reported group age attracted to** | |
| Prepubertal (pedophile) | 1 | 1.3 |
| Pubertal (hebephile) | 3 | 3.9 |
| Prepubertal and pubertal (pedophile and hebephile) | 9 | 11.7 |
| Prepubertal and adult (pedophile and teleiophile) | 4 | 5.2 |
| Pubertal and adult (hebephile and teleiophile) | 25 | 32.5 |
| Prepubertal, pubertal and adult (pedophile, hebephile, and teleiophile) | 34 | 44.2 |
| Not specified | 1 | 1.3 |
| **Diagnosis of pedophilia according to ICD-10 (F65.4)** | |
| Yes | 72 | 93.5 |
| No | 5 | 6.5 |
| **Self-reported sexual orientation** | |
| Attracted to males | 13 | 16.9 |
| Attracted to females | 47 | 61.0 |
| Attracted to both sexes | 16 | 20.8 |
| Not specified | 1 | 1.3 |
| **Self-reported prior lifetime sexual offenses** | |
| Non-offending | 5 | 6.5 |
| Child sexual abuse only | 7 | 9.1 |
| Child pornography use only | 42 | 54.5 |
| Mixed offenses | 23 | 29.9 |
| Previously known to justice | |
| Child pornography offenses | 10 | 13.0 |
| Child sexual abuse offenses | 5 | 6.5 |
| Child pornography and child sexual abuse offenses | 1 | 1.3 |
| Not previously known to justice | 61 | 79.2 |

*Absolute share in the sample.
†Percentage share in the sample.
‡Status when entering the treatment program.
therapeutic technique, and indication of psychiatric treatment or medication besides psychotherapy are adjusted to the individual’s responsivity factors, for example, social anxiety and social skills, antisocial personality disorder and psychopathy, self-esteem, and intelligence. In the initial phase of therapy treatment motivation, treatment goals, and biography work are focused. The intermediate phase is characterized by working on risk factors and behavioral change, especially abuse related attitudes, sexual self-regulation, awareness and handling of risk situations, emotional congruence with children, hypersexuality and sexual urges, enhancement of coping strategies, increase in interpersonal skills, and empathy. Relapse prevention, possible support groups, and development of future plans are subject of the final phase.4

Participants underwent a final voluntary diagnostic procedure after having completed the treatment program. This final diagnostic procedure contained the same questionnaires as the initial diagnostic procedure, except for some updates.

Only those men who had filled in both questionnaires, 19-item Hypersexual Behavior Inventory (HBI-19) and Barratt Impulsiveness Scale Version 11 (BIS-11), in the initial diagnostic procedure were included in the analysis. For this reason, 2 participants were excluded. The final sample consisted of 77 participants. Their age ranged from 19 to 61 years (M = 36.42, standard deviation [SD] = 11.09). One participant did not indicate his age. In addition to psychotherapy, 28 (36%) of these 77 participants received medication (18 received selective serotonin reuptake inhibitors, 9 received antipsychotics, 4 received tricyclic antidepressants, 2 received selective serotonin noradrenalin reuptake inhibitors, 2 received mood stabilizers, 1 received a GnRH agonist, and 1 received a monoamine oxidase (MAO) inhibitor). Twenty-nine (38%) participants were still in treatment, and 48 (62%) had partly or fully completed the treatment program. 29 (60%) of these participants, who had partly or fully completed the treatment program, had completed the final diagnostic procedure. These 29 men were included into pre-post comparison analysis. Their treatment duration ranged from 7 to 67 months (M = 31.55, SD = 15.36). Seven (24%) of these 29 men who were included into pre-post comparison analysis were treated with medical drugs in addition to psychotherapeutic treatment (6 received selective serotonin reuptake inhibitors, 1 received an antipsychotic, 1 received a tricyclic antidepressant, and 1 received a mood stabilizer). In the final diagnostic procedure, the HBI-19 was completed by 26 participants and the BIS-11 by 28 participants.

Measures

BIS-11. The BIS-1165 is a self-report questionnaire which assesses impulsiveness. It contains 30 items that are answered on a 4-point scale. Its factor structure consists of 3 second-order factors and 6 first-order factors: Attentional Impulsiveness (8 items: Attention [5 items, eg, “I concentrate easily”] and Cognitive Instability [3 items, eg, “I often have extraneous thoughts when thinking”]), Motor Impulsiveness (11 items: Motor [7 items, eg, “I act on the spur of the moment”] and Perseverance [4 items, eg, “I change jobs”]), and Nonplanning Impulsiveness (11 items: Self-Control [6 items, eg, “I am a careful thinker”] and Cognitive Complexity [5 items, eg, “I get easily bored when solving thought problems”]). Total scores range from 30 to 120. Cronbach’s alpha of the English version is 0.82 for the total score.65 Cronbach’s alpha of the German version is 0.69 for the total score.

HBI-19. The HBI-1967 is a self-report questionnaire designed to measures hypersexuality via 3 factors: Control (8 items, eg, “I engage in sexual activities that I know I will later regret”), Coping (7 items, eg, “Sex provides a way for me to deal with emotional pain I feel”), and Consequences (4 items, eg, “I sacrifice things I really want in life in order to be sexual”). Each item is rated on a 5-point Likert-type scale. Total scores range from 19 to 95. Its English version has a Cronbach’s alpha for the total score of 0.96.67 Its German version has a Cronbach’s alpha for the total score of 0.95–0.96.68

Statistical Analysis

In the initial diagnostic procedure, the HBI-19 was completed by 76 participants and the BIS-11 by 73 participants. First, sociodemographic data were analyzed via descriptive statistics (mean values, median, standard deviation, and range). Second, the relation between hypersexuality and impulsivity before treatment, that is, between HBI-19 total score and BIS-11 total score of the initial diagnostic procedure, was analyzed using the Spearman’s correlation coefficient as variables were ordinally scaled.69 Third, a paired-samples t-test was performed, as the data were normally distributed, to compare hypersexuality, that is, HBI-19 total score, and impulsivity, that is, BIS-11 total score, between initial and final diagnostic procedure.70 Taking the small sample size into consideration, Wilcoxon signed-rank tests were carried out to run an exploratory analysis in order to compare scores between initial and final diagnostic procedure.71 Fourth, an independent samples t-test was performed to compare the difference between HBI-19 total score of the initial diagnostic procedure and HBI-19 total score of the final diagnostic procedure of patients with an indication for psychotherapy only and patients with an indication for medication in addition to psychotherapy, as data were normally distributed.70 Significance was set at a value less than 0.05. All statistical analyses were conducted using SPSS (Version 27.0. IBM Corp. Released 2020. IBM SPSS Statistics for Macintosh, Armonk, NY).

RESULTS

Scores of BIS-11 and HBI-19 in the Participants

The mean of BIS-11 total score was M = 61.92 (SD = 10.30; Mdn = 62; range 40–110). Only 11.1% participants can be classified as highly impulsive, with a BIS-11 total score greater or equal to 72.72 The mean of the HBI-19 total score was M = 55.97 (SD = 14.96; Mdn = 59; range 25–84) (Table 2).
Sixty-four percent of the participants scored at or above the cut-off score of 53.74 for clinical hypersexuality.

### Relationship Between BIS-11 and HBI-19

A Spearman’s correlation was run to determine the relationship between BIS-11 total score and HBI-19 total score. There was a weak, positive monotonic correlation between BIS-11 total score and HBI-19 total score ($r_s = 0.25, n = 71, P = .035$).

In a further exploratory analysis, a Spearman’s correlation was run to determine the relationship between BIS-11 total score and HBI-19 total score in the sample of participants who scored at or above the cut-off point for clinical hypersexuality ($n = 47$). There was no significant correlation between BIS-11 total score and HBI-19 total score.

### Pre-Post Comparison of BIS-11 and HBI-19

A paired-samples $t$-test indicated that HBI-19 total score was significantly lower after (partial) completion of treatment ($M = 56.76, SD = 16.49$) than before beginning treatment ($M = 60.41, SD = 8.08$) and BIS-11 total score after (partial) completion of treatment ($M = 59.30, SD = 9.51$) but no statistical difference exists between BIS-11 total score before beginning treatment ($M = 60.41, SD = 8.08$) and BIS-11 total score after (partial) completion of treatment. The difference between HBI-19 total score in pretest and HBI-19 total score in post-test was not significantly different for participants with an indication of medication in addition to psychotherapy ($M = 11.33, SD = 11.22$) than for participants with an indication of psychotherapy only ($M = 9.89, SD = 19.43$).

A paired-samples $t$-test showed that there was no statistical difference between the scores on BIS-11 subscales and HBI-19 Coping subscale before beginning treatment and after (partial) completion of treatment.

### Table 2. Descriptive statistics BIS-11 and HBI-19 ($n = 77$)

|                | M     | SD   | Mdn  | Range | $n$ | ≥Cut-off* ($n\%)$ | M (SD) of nonclinical samples |
|----------------|-------|------|------|-------|----|------------------|------------------------------|
| **BIS-11**     |       |      |      |       |    |                  |                              |
| Total score    | 61.92 | 10.30| 62   | 40–110| 72 | 8 (11.1%)        | 62.8 (9.2)*                  |
| Attentional Impulsiveness | 16.49 | 3.57 | 16   | 10–31 | 74 | -                | 64.8 (3.9)*                  |
| Motor Impulsiveness | 21.13 | 4.20 | 21   | 14–40 | 76 | -                | 22.4 (3.4)                   |
| Nonplanning Impulsiveness | 24.07 | 4.81 | 24   | 14–39 | 74 | -                | 23.6 (4.5)                   |
| **HBI-19**     |       |      |      |       |    |                  |                              |
| Total score    | 55.97 | 14.96| 59   | 25–84 | 75 | 48 (64.0%)       | 34.2 (14.5)*                 |
| Coping        | 19.57 | 6.37 | 20   | 7–31  | 77 | -                |                              |
| Control       | 26.19 | 8.12 | 28   | 10–39 | 75 | -                |                              |
| Consequences  | 10.27 | 3.95 | 10   | 4–19  | 77 | -                |                              |

|                | M     | SD   | Mdn  | Range | $n$ | ≥Cut-off* ($n\%)$ | M (SD) of nonclinical samples |
|----------------|-------|------|------|-------|----|------------------|------------------------------|
| **BIS-11**     |       |      |      |       |    |                  |                              |
| Total score    | 61.92 | 10.30| 62   | 40–110| 72 | 8 (11.1%)        | 62.8 (9.2)*                  |
| Attentional Impulsiveness | 16.49 | 3.57 | 16   | 10–31 | 74 | -                | 64.8 (3.9)*                  |
| Motor Impulsiveness | 21.13 | 4.20 | 21   | 14–40 | 76 | -                | 22.4 (3.4)                   |
| Nonplanning Impulsiveness | 24.07 | 4.81 | 24   | 14–39 | 74 | -                | 23.6 (4.5)                   |
| **HBI-19**     |       |      |      |       |    |                  |                              |
| Total score    | 55.97 | 14.96| 59   | 25–84 | 75 | 48 (64.0%)       | 34.2 (14.5)*                 |
| Coping        | 19.57 | 6.37 | 20   | 7–31  | 77 | -                |                              |
| Control       | 26.19 | 8.12 | 28   | 10–39 | 75 | -                |                              |
| Consequences  | 10.27 | 3.95 | 10   | 4–19  | 77 | -                |                              |

*There is no definite cut-off score for BIS-11. Individuals with a total score of 72 or above can be classified as highly impulsive.73 The cut-off for HBI-19 is 53.74

1For a subsample of male college students and male participants from the community.73
2For a subsample of male undergraduates.75
3For a male and female convenience sample.76
4For a subsample of male undergraduates.77
5For combined samples of male and female healthy controls.74
6For a sample of male and female online participants.78

### Table 3. Results of paired-samples $t$-test and descriptive statistics for total score BIS-11 and HBI-19 ($n = 29$)

| Outcome | Pre-test $M$ | SD | Post-test $M$ | SD | $n$ | 95% CI for mean difference | $t$ | $P$ | df | Effect size $d$ |
|---------|-------------|----|--------------|----|-----|---------------------------|-----|-----|----|----------------|
| BIS-11  | 60.41       | 8.08| 59.30        | 9.51| 27  | -2.49, 4.72               | 0.63| .532| 26| -0.13 | -0.66, 0.41 |
| HBI-19  | 56.76       | 16.49| 46.52        | 15.30| 25  | 2.98, 17.50               | 2.91*| .008*| 24| -0.64 | -1.21, −0.08 |

BIS-11 = Barratt Impulsiveness Scale Version 11; HBI-19 = Hypersexual Behavior Inventory.

* $P < .05$. 

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score on HBI-19 Consequences subscale was considerably lower after (partial) completion of treatment (M = 8.46, SD = 3.45) than before beginning treatment (M = 10.29, SD = 4.08), t (27) = 2.61, P = .015, d = −0.48, but was not significant after Bonferroni-correction. With Bonferroni-corrected P value, the score on HBI-19 Control subscale was significantly lower after (partial) completion of treatment (M = 19.26, SD = 8.02) than before beginning treatment (M = 26.52, SD = 8.96), t (26) = 4.29, P < .001, d = −0.85 (Table 5).

Moreover, a further exploratory analysis with the sample of the participants who scored at or above the cut-off point for clinical hypersexuality before beginning treatment (n = 18) was carried out. A Wilcoxon signed-rank test indicated that HBI-19 total score was significantly lower after (partial) completion of treatment (Mdn = 46.5) than before beginning treatment (Mdn = 64.5), T = 1, z = −3.47, P = .001, r = −0.60, that HBI-19 Coping subscale was significantly lower after (partial) completion of treatment (Mdn = 17.5) than before beginning treatment (Mdn = 22), T = 3, z = −2.51, P = .012, r = −0.43, that HBI-19 Control subscale was significantly lower after (partial) completion of treatment (Mdn = 22) than before beginning treatment (Mdn = 31), T = 0, z = −3.62, P < .001, r = −0.61, and that HBI-19 Consequences subscale was significantly lower after (partial) completion of treatment (Mdn = 8) than before beginning treatment (Mdn = 13), T = 1, z = −3.16, P = .002, r = −0.53 (Table 6). No further exploratory analysis with a sample of participants with high impulsivity was performed.

### Table 4. Results of independent samples t-test for HBI-19 by indication of medication in addition to psychotherapy (n = 29)

| Outcome    | Group                        | ΔM    | SD    | n  | ΔM    | SD    | n  | 95% CI for mean difference | t    | P     | df  | Effect size d |
|------------|------------------------------|-------|-------|----|-------|-------|----|--------------------------|-------|-------|-----|----------------|
| HBI-19     | Psychotherapy only           | 9.89  | 19.43 | 19 | 11.33 | 11.22 | 6  | −18.84, 15.96            | −0.17 | .487  | 23  | 0.07           |
|            | Psychotherapy + medication   |       |       |    |       |       |    |                          |       |       |     | −0.84, 1.00    |

HBI-19 = Hypersexual Behavior Inventory; ΔM = Difference between HBI-19 total score in pre-test and HBI-19 total score in post-test.

### Table 5. Results of paired-samples t-tests and descriptive statistics for subscales BIS-11 and HBI-19 (n = 29)

| Outcome   | Pre-test | Post-test | 95% CI for mean difference | t    | P     | df  | Effect size d |
|-----------|----------|-----------|---------------------------|------|-------|-----|----------------|
|           | M        | SD        | M              | SD   |       |     |                |
| BIS-11    |           |           |                |      |       |     |                |
| Attentional impulsiveness | 16.00   | 3.23     | 15.42 | 3.15 | 26  | −0.63, 1.78 | 0.99 | .333 | 25   | −0.18 | −0.73, 0.36 |
| Motor impulsiveness | 20.86   | 2.72     | 20.89 | 3.87 | 28  | −1.36, 1.29 | −0.06 | .956 | 27   | 0.01  | −0.52, 0.53 |
| Nonplanning impulsiveness | 22.96   | 4.50     | 23.28 | 4.33 | 25  | −2.00, 1.36 | −0.39 | .697 | 24   | 0.07  | −0.48, 0.63 |
| HBI-19    |           |           |                |      |       |     |                |
| Coping    | 19.73    | 6.47     | 19.12 | 7.02 | 26  | −1.96, 3.19 | 0.49 | .627 | 25   | −0.09 | −0.63, 0.45 |
| Control   | 26.52    | 8.96     | 19.26 | 8.02 | 27  | 3.78, 10.74 | 4.29*| <.001*| 26   | −0.85*| −1.41, −0.30 |
| Consequences | 10.29   | 4.08     | 8.46  | 3.45 | 28  | 0.39, 3.25 | 2.61 | .015 | 27   | −0.48 | −1.02, 0.05 |

BIS-11 = Barratt Impulsiveness Scale Version 11; HBI-19 = Hypersexual Behavior Inventory.
*The level of significance (P < .05) was obtained after Bonferroni adjustment (0.05/4 = 0.0125).

### Table 6. Results of Wilcoxon signed-rank tests for HBI-19 of participants with clinical hypersexuality (n = 18)

| Outcome    | Pre-test | Post-test | Z    | P     | Effect size r |
|------------|----------|-----------|------|-------|---------------|
|            | M        | SD        | Mdn  | n  |                |
| HBI-19     |           |           |      |    |                |
| Total score | 66.72    | 8.32     | 64.5 | 18 | −3.47* | .001* | −0.60* |
| Coping     | 22.00    | 5.88     | 23   | 18 | −2.51* | .012* | −0.43* |
| Control    | 32.00    | 4.03     | 31   | 18 | −3.62* | <.001*| −0.61* |
| Consequences | 12.72   | 2.65     | 13   | 18 | −3.16* | .002* | −0.53* |

HBI-19 = Hypersexual Behavior Inventory.
*The level of significance (P < .05) was obtained after Bonferroni adjustment (0.05/4 = 0.0125).
done because only one participant had a BIS-11 total score before beginning treatment that was greater or equal to 72.

**DISCUSSION**

**Impulsivity and Hypersexuality in Self-Refereed Men With SIM**

Impulsivity, as measured by BIS-11 total score, was not specifically pronounced in this sample of self-referred men with SIM. The mean of BIS-11 total score and the means of BIS-11 subscale scores were comparable to those of participants in studies with non-clinical samples, mainly with students\(^9\),\(^6\),\(^5\),\(^7\),\(^7\),\(^7\),\(^9\) (Table 2). This result is also comparable to that of the study of Engel et al\(^9\) with a sample of male patients who participated in the psychotherapeutic treatment program offered by the Prevention Network “Kein Täter werden (means: not become an offender)” in 2 other network sites. 82.8% of the patients in the treatment group had BIS-11 total scores which were within the normal limits of impulsivity.\(^9\) In the current exploratory pilot study only 11.1% of the participants could be classified as highly impulsive, that is, even less participants were outside the upper normal limit than in the study of Engel et al.\(^9\)

Hypersexuality, as measured by HBI-19 total score, was considerably higher in the current exploratory pilot study with self-refereed men with SIM than in other studies with nonclinical samples\(^5\),\(^6\),\(^7\) (Table 2). The mean score in the current sample (M = 56.17, SD = 14.96) was only slightly lower than the mean score of a sample with hypersexual disordered individuals\(^6\) who yielded total HBI-19 scores of M = 66.3 (SD = 15.6). However, nonclinical samples only yielded HBI-19 scores of M = 34.2 (SD = 14.5) or M = 33.9 (SD = 10.46), respectively.\(^6\),\(^7\),\(^8\)

The majority of the participants of the present exploratory pilot study (64.0%) could be categorized as patients with a clinically relevant hypersexuality, that is, the majority scored at or above the cut-off point of 53. Estimated prevalence in the general population differs between studies. It ranges from 3% to 16.8%.\(^7\) In a Swedish sample of 2,450 subjects from the general population, 12% of males indicated hypersexuality.\(^7\) In the effective sample of 8,718 individuals of a large population-based online study, 12.1% of men were classified as hypersexual on the basis of a total sexual outlets/week of \(\geq\).\(^7\)\(^8\) In a nationally representative study of the United States the prevalence of distress associated with difficulty controlling sexual urges, feelings and behaviors—measured by the Compulsive Sexual Behavior Inventory—was 10.3% among men.\(^3\) Hence, hypersexuality is strongly overrepresented in the current sample of self-referred men with SIM. This result is comparable to, but even more pronounced than in the study of Engel et al,\(^9\) whose sample consisted of male patients who participated in the psychotherapeutic treatment program of “Kein Täter werden (means: not become an offender)”. Engel et al\(^9\) reported that 52.6% of the patients in the treatment group scored higher in HBI-19 than the cut-off point of greater or equal to 53. The mean score of the treatment group yielded M = 54.05 (SD = 17.28), compared to M = 56.17 (SD = 14.96) in the current sample.

The overrepresentation of clinical hypersexuality in this exploratory pilot study’s sample of men with SIM may support the hypothesis that individuals with hypersexual behavior tend to find deviant sexual stimuli more and more interesting over the course of time, and are therefore prone to consume paraphilic material sooner or later.\(^8\) However, nonparaphilic hypersexual disorder is not uncommon,\(^8\) ie, not all individuals with hypersexual behavior develop paraphilic interests. Vice versa, as the present exploratory pilot study shows, not all individuals with paraphilic interests, such as SIM, are also characterized by hypersexual behavior. Further research is needed in order to investigate what moderates the relationship between hypersexuality and SIM.

With regard to the present findings, therapeutic interventions with a focus on the treatment of hypersexuality seem to be indicated for this group of patients because, in itself and even more critical in combination with pedophilia, it is a major risk factor for (re-)offending.\(^5\) Techniques in psychotherapeutic interventions for hypersexual behavior, among others, focus on impairment in social and occupational functioning, negative mood states, and lack of control.\(^5\) However, research on the efficacy of the existing treatment approaches is still in its very beginning.\(^3\),\(^6\)

Moreover, in every treatment it has to be considered that hypersexuality is a complex phenomenon that can be traced back to diverse predispositions and be associated with various risk factors, for example, dysregulated sexual inhibition / sexual exhibition or maladaptive coping mechanism, that differ individually.\(^3\) Last but not least, individuals with SIM are a heterogeneous group, which also has to be taken into account when planning treatment goals. For instance, men with mixed offenses showed to be a particularly high-risk group,\(^7\) minor-attracted persons with a history of sexual activity with children indicated more antisocial traits than those without sexual activity with children,\(^16\) and men with contact sexual offenses reported a higher ratio of child pornography to adult pornography than men with noncontact sexual offenses.\(^8\)

**The Relationship Between Impulsivity and Hypersexuality**

In the current sample of self-referred men with SIM, there was only a weak positive correlation between BIS-11 total score, that is, impulsivity, and HBI-19 total score, that is, hypersexuality, before the start of treatment. Apart from this, an exploratory analysis with the sample of patients with clinically relevant hypersexuality, that is, with a HBI-19 total score equal to or above 53, indicated no significant correlation between impulsivity (BIS-11 total score) and hypersexuality (HBI-19 total score) at all. As described above, the current state of research on the relationship between impulsivity and hypersexuality is still insufficient. The current exploratory pilot study
contributed to these findings by analyzing a sample of self-referred men with SIM that is, as described above, also characterized by a high ratio of hypersexuality.

The results of the current exploratory pilot study run counter to studies indicating elevated rates of impulsivity in males with hypersexual / sexually compulsive behavior.\textsuperscript{26–29,67} They correspond to the findings of Mulhauser et al,\textsuperscript{73} who only found a trend toward significance when comparing hypersexual and nonhypersexual males according to their level of impulsivity. The results also correspond to the findings of Reid et al who showed that only around 50% of treatment-seeking hypersexual individuals presented elevated impulsivity in self-report measures.\textsuperscript{29,75}

The present exploratory pilot study queries the impulsivity model of hypersexuality and supports the argument that “other taxa [than generalized impulsivity] may also explain hypersexuality”\textsuperscript{76} (p. 2237); or that, as Reid et al\textsuperscript{83} suggest, not generalized impulsivity, but more a context-specific form of impulsivity that is related to the behavior domain of sexuality, might be predominant in hypersexual disorder. The dual control model gives an explanation that implies such a context specificity regarding the behavior domain of sexuality.\textsuperscript{36} It posits that sexual arousal and related behaviors are determined by an interaction between sexual excitation and sexual inhibition, and that individuals vary in their propensity for both of these processes. Research indicates, for example, that individuals with sexual addiction have significantly higher sexual excitation scores than an age-matched control-group, but do not differ in their sexual inhibition scores. However, when divided into “compulsive masturbers” and those having sex with other people, those having sex with other people had significantly lower scores on the Inhibition Due to Threat of Performance Consequences scale (SIS2) than the control group and the “compulsive masturbers,” but not on the Inhibition Due to Threat of Performance Failure scale (SIS1).\textsuperscript{84} Against this background, hypersexuality may be regarded as a sex-specific lack of sexual self-control.\textsuperscript{36}

**Change in Impulsivity and Hypersexuality Between Before Start of Treatment and After (Partial) Completion of Treatment**

Hypersexuality, as measured by HBI-19 total score, was significantly reduced after (partial) completion of treatment, compared to the time before start of treatment. However, there was no significant change of impulsivity, as measured by BIS-11 total score, between before start of treatment and after (partial) completion of psychotherapeutic treatment. This is in accordance with the result that Engel et al\textsuperscript{19} report in their study with a sample of men treated in the program offered by the Prevention Network “Kein Täter werden (means: not become an offender)” in Hannover and Regensburg. In their comparison of treatment group before and after therapy, they found no statistically significant difference in BIS-11 total score, but a significant reduction of HBI-19 total score.\textsuperscript{3}

Considering the fact that treatment approaches in the Prevention Network “Kein Täter werden (means: not become an offender)” are based on sexual therapy [cf. 2,4,85], these results can be explained by the focus of treatment on sexuality-related issues. It is very likely that therapists and patients discuss problems concerning (hyper-)sexuality much more often than difficulties associated with generalized impulsivity. And on the assumption that more treatment intensity regarding a certain issue leads to greater treatment effects, it seems plausible that HBI-19 total score was significantly reduced, whereas BIS-11 total score was not.

Treatment approaches in the Prevention Network have a particular focus on risk factors, as they are also based on the treatment of men having committed offenses [cf. 2,4,85]. As general impulsivity was not particularly pronounced in the current sample of self-referred men with SIM, it seems plausible that it was not regarded as a specifically relevant risk factor, thus was not specifically focused on in treatment and therefore not reduced after (partial) completion of treatment.

The HBI-19 total score did not differ significantly between men who received medication in addition to psychotherapy and men who solely received psychotherapeutic treatment. Maybe men who receive medication have certain individual characteristics, for example, more complex psychiatric disorders, less treatment motivation, or broader symptoms of hypersexuality, that offset the hypersexuality-decreasing effect of their pharmacological treatment when compared to men with an indication for psychotherapy only.

With regard to the subscales, an exploratory analysis revealed that compared to before start of treatment, the HBI-19 Control subscale score was significantly reduced, the HBI-19 Consequences subscale score was considerably—however not significantly—reduced, and the HBI-19 Coping subscale score was not statistically different after (partial) completion of treatment. Like BIS-11 total score, BIS-11 subscale scores indicated no significant change between before start of treatment and after (partial) completion of psychotherapeutic treatment. An exploratory analysis with the sample of patients with clinical hypersexuality, that is, with a HBI-19 total score equal to or above 53, indicated that compared to before start of treatment, the HBI-19 Coping, Control and Consequences subscale scores were significantly reduced after (partial) completion of psychotherapeutic treatment.

It seems reasonable to focus most strongly on the aspect of control concerning hypersexuality, that is, deficits to control sexual fantasies and behavior,\textsuperscript{68} because little control may imply a high risk of (re-)offending.\textsuperscript{86} This might explain why the HBI-19 Control subscale score was significantly reduced after (partial) completion of treatment in the whole sample. From a general
perspective of psychotherapy, it seems reasonable to put a focus on undesired consequences of hypersexuality, because they are probably strongly associated with psychological strain for the patients. Moreover, hypersexuality can be a risk factor if undesired consequences are related to (re-)offending. This might explain why the HBI-19 Consequences subscale was at least considerably reduced in the whole sample, and was significantly reduced in the subsample of patients with clinical hypersexuality. The aspect of coping with regard to hypersexuality, that is, the use of sexual behaviors as a coping mechanism for stress management or reducing unpleasant affective states, seemed to be least targeted in treatment—maybe because sex as a coping mechanism was regarded as a less relevant risk factor than sex as a problem of control, and because sex as a coping strategy was not so strongly associated with psychological strain. It was not statistically altered in the whole sample.

**LIMITATIONS**

The generalizability of the present findings is limited because of the sample size of only 77 participants in the whole sample and only 29 participants in the sample for pre-post comparison. Furthermore, it is restricted because of the inherent characteristics and institutional context of the “Kein Täter Werden (means: not become an offender)” network site in Hamburg (Institute for Sex Research, Sexual Medicine and Forensic Psychiatry). Besides that, the data and maybe specific characteristics of the 12 patients who had not provided their informed consent are not represented in the findings of this exploratory pilot study. Last but not least, the sample of the present study was a selective sample; there surely was a selection bias of highly motivated patients. The results are not generalizable to all men with pedophilia, not to all men with pedophilia not known to the legal system, not to all men with pedophilia not involved in ongoing legal proceedings, and not to men with pedophilia treated in nonforensic outpatient settings. However, the sample in this exploratory pilot study is a rare sample collected over 8 years, which demands attention from a clinical perspective.

Regarding validity, our results are limited due to the exclusive use of self-report measurements with forced-choice categories. The latter may simplify answers and/or distort information because of the specific choice sets given. The clients’ self-report was not validated by objective measures. Thus, our data might be influenced by social desirability and the measures are tied to the participants’ insights and self-perceptions. They might also be influenced by the desire of clients, especially those with long duration in treatment, to prove to themselves an adequate effect of their treatment. In addition, data of the participants who received medication might be affected by the (individually) specific influence of their medication on (hyper-)sexuality and/or impulsivity. Their self-reported degree of hypersexuality and/or impulsivity might be reduced because of the actual effects of their medication on these dynamic risk factors, or via placebo effects.

Furthermore, impulsivity is not a precise construct in the literature. It can be conceptualized and measured in different ways. There is consensus that it is a multidimensional construct. Among other things, authors differentiate between extraverted and psychotic impulsivity, functional and dysfunctional impulsivity, or reward-discounting/cognitive impulsiveness, motor-impulsiveness of rapid-response and nonplanning impulsiveness. Measures of impulsivity either are self-report measures (eg, Barratt Impulsiveness Scale) or behavioral measures (eg, lab-based approaches that compute errors of commission in a go/no-go task). The different measures are only modestly correlated. In the present study impulsivity was measured by the BIS-11 which only assesses the personality/behavioral construct of impulsiveness. Thus, impulsiveness was not considered in its multidimensionality, for example, a lab-based approach was not part of this exploratory pilot study.

The comparison with nonclinical samples for investigating the question if impulsivity and hypersexuality are particularly pronounced in men with SIM is not matched for the participants of this exploratory pilot study. Standard values of norm samples are not available, neither for BIS-11 nor for HBI-19. However, the comparisons with nonclinical samples indicate clearly enough that hypersexuality, but not impulsivity, seems to be elevated in our sample. In the first case the mean values are very different from each other (with a difference of the mean values of more than 20 and a possible total score between 19 and 95), in the second case the mean values are very similar to each other (with a difference of the mean values of not more than 3 and a possible total score between 30 and 120).

In the statistical analyses, no control variables were included in order to keep the analyses simple. In future studies, one could, for example, control for age, stability of social environment, stability of mental state, treatment duration, and treatment frequency because these variables might influence the self-report measures of hypersexuality and/or impulsivity. In further studies with larger samples, mediation and moderation analyses could be conducted, for example, concerning the influence of age or treatment duration. Moreover, the research design for analyzing treatment did not include a control condition and randomized assignment. Hence, “selection bias, expectancy, regression to the mean, maturation, or spontaneous recovery” (p. 303), as well as social desirability or self-affirmation of treatment success might have caused lower HBI-19 total scores in the final diagnostic procedure. Thus, the findings can only be seen as preliminary results. Further research, especially “a co-ordinated multisite study with an adequate control group and sample size” (p. 611), is needed.
CONCLUSION

The psychotherapeutic treatment approach in Hamburg of the Prevention Network “Kein Täter werden (means: not become an offender)” seems to target hypersexuality. Hypersexuality is known as a core risk factor for (re-)offending. It was considerably above average in the current sample of men with SIM and only weakly associated with generalized impulsivity which, besides that, was not elevated above average in this sample. In order to target a relevant risk factor in self-referred men with SIM, a focus on treatment approaches that were developed to treat hypersexuality can be expected to be more effective than a focus on approaches that target generalized impulsivity. In the end, every treatment has to be adapted to suit the individual patient, as the scattering of the HBI-19 and BIS-11 total scores shows that impulsivity and hypersexuality is relevant for some, but not for all patients. The present findings have to be replicated in a larger sample and with several measures of impulsivity in order to do justice to the multidimensionality of impulsiveness. Further research on the role of the context-specific form of sexual impulsivity is also needed.

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Corresponding Author: Ute Lampalzer, PhD, Institute for Sex Research, Sexual Medicine and Forensic Psychiatry, University Medical Center Hamburg-Eppendorf, Martinistraße 52, Hamburg D-20246, Germany.; E-mail: u.lampalzer@uke.de

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STATEMENT OF AUTHORSHIP

Ute Lampalzer: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing - original draft, Writing - review and editing; Safiyé Tozdan: Data curation, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing - review and editing; Fritjof von Fraunqué: Data curation, Investigation, Project administration, Resources, Validation, Writing - review and editing; Peer Briken: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing - review and editing.

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