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The Kink Orientation Scale: Developing and Validating a Measure of Kink Desire, Practice, and Identity

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ABSTRACT

Kink, often referred to as BDSM, is an important aspect of a sizable minority's sexual desires, practices, and personal relationships, yet there are few ways to assess kink engagement in a holistic manner. This study aimed to develop the Kink Orientation Scale (KOS), a novel short tool for measuring different aspects of kink sexuality. In phase one, 27 items were created and included in the initial scale based on a literature review and focus groups with kinky and non-kinky individuals. In phase two, the KOS was administered to 200 university students. Exploratory Factor Analyses (EFA) were used to determine the factor structure and dimensionality of the KOS, and we retained 18 items in the scale and identified five factors. In phase three, the 18 item KOS was administered to a kink sample of 1025 participants as a form of validation. Confirmatory Factor Analyses also identified five factors with a strong overlap to the EFA. The five factors were: kink identity; kink community; kink paraphernalia; kink practices; and sexual communication. The kink sample also provided higher scores on the KOS compared with the non-kink sample. This study shows the potential utility of the KOS in measuring kink engagement holistically.

Introduction

Kink has a long history as a social and sexual practice (Simula et al., 2023); often referred to as BDSM, it is an umbrella term for a range of activities that include BDSM but is more encompassing on non-normative sexual practices. Wignall (2022, p. 39) defined kink as:

A spectrum of sexual or erotic activities outside of normative versions of sex, undertaken for sensory, emotional, or psychological pleasure. It tends to include: the exchange of power, or performance of this; the infliction or receiving of pain; the wearing of gear; and/or the fetishization of body parts and/or objects. Kink can be practiced individually or in groups, and it can be organized into communities and subcultures. It is consensual, with a shared understanding that the activities are kinky.

Kink is gaining increasing visibility in Western cultures, where it is part of mainstream culture (Sundén, 2023; van der Beek & Thomas, 2023), commodified by consumer culture (Weiss, 2011), and present in legal and policy discourse (Sheff, 2021). There is increasing participation in kink cultures among the general population, and these cultures have diversified in terms of interest, dynamics, and location (Boyd-Rogers et al., 2022; Walker & Kuperberg, 2022). Yet despite this, no validated instruments measure kink desire and practice, which may be one reason why the study of kink is marginalized in psychology and sexology.

The purpose of the current study was to develop a measure of kink engagement that incorporates elements of desire, practice, and identity. The aim of this scale is to facilitate further research into kink by moving the focus beyond only those who engage in kink communities and as such capture a greater diversity of kink attitudes, practices, and identities. To do this, we created the *Kink Orientation Scale* (KOS), an 18-item scale that explores different facets, with scores ranging from 18 to 90, with a higher score indicative of a higher engagement with kink.

Research on Kinky Individuals

Estimates on the prevalence of kink in the general population show a substantial proportion have either engaged in or fantasized about the practice. Estimates for having ever engaged in kink is between 20-30% of people (Brown et al., 2020; Herbenick et al., 2017), or as high as 46.8% in a representative sample of the Belgian population (Holvoet et al., 2017). There are also clear differences in engagement when considering sexual orientation, with a Finnish study of 8,137 participants finding non-heterosexual participants displaying 83% more participation in kink than heterosexual participants (Paarnio et al., 2023). Estimates for the prevalence of kink participation in the past 12 months (at the time people were asked) range from 1.8% for sexually active Australians (Richters et al., 2008) to 6.6% of festival attendees in England (McCormack et al., 2022). The prevalence of kink *fantasies* is considerably higher: a systematic scoping review of kink prevalence found that kink (or BDSM in the study) related fantasies were common, ranging between 40-70% of adults (Brown et al., 2020).

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These estimates have several issues, including variability in terminology used (e.g., kink/kinky sex; BDSM; SM) and whether specific practices are listed, potentially excluding some categories or meaning that respondents may misunderstand the question (when no explanation is given) (Hébert & Weaver, 2014). Studies also tend to use a single question for kink interest or engagement with a binary response option, rather than a question which explores the different facets of kink (Rehor & Schiffman, 2021).

Despite such prevalence, research on sexual minority populations has a troubled history, often adopting a pathological approach that located the problem of different sexualities or practices in the individual rather than in a society that was intolerant of difference (see Greenberg, 1990; Herek, 2004). Research on kink has followed this same trajectory, with early perspectives on kink pathologizing such behaviors by its inclusion in the DSM (Krueger, 2010a, 2010b) and through linking interests in kink with anti-social and criminal activities (see Foulkes, 2019). This perspective has been critiqued, with recent quantitative research offering new insights into kink (e.g., Brown et al., 2020; De Neef et al., 2019; Schuerwegen et al., 2021), while rich ethnographic and qualitative data of kink cultures document the norms and practices of these cultures. In these ways, kink practitioners and social researchers emphasize the social aspects and meanings attached to kink practices without stigmatizing or pathologizing them (Hammack & Wignall, 2024; Hughes & Hammack, 2022; Newmahr, 2011).

A range of theoretical conceptualizations of kink beyond the pathological model have been developed. One approach posits kink as a form of leisure, emphasizing pleasurable and technical components, while situating potential harms as risks akin to other sporting or leisure activities (Williams & Sprott, 2022; Wuyts & Morrens, 2022). Kink has also been theorized as a sexual orientation, acknowledging innate attraction and sexual interests (Sprott & Williams, 2019). Other research focuses on kink as a social identity, a subculture or social community (Weinberg, 2023; Wignall et al., 2022). These frameworks can be simultaneously applied to kink depending on one's motivations for engaging in kink (Wignall, 2022).

Methodological Problems in Research on Kink

Despite these empirical and theoretical developments, three problems persist within the recent body of research into kink: 1) difficulty in reaching participants; 2) recruitment predominantly via identification rather than practice or desire; 3) the over reliance on FetLife for recruitment. Regarding difficulty in reaching participants, people who engage in kink are often hard to recruit because of the continued subcultural and hidden aspects of kink practice (Weinberg, 2023) and perceived social stigma (Hansen-Brown & Jefferson, 2023). It can be difficult to access kink venues and communities, partly due to their subcultural nature and an associated concern of outsiders entering these spaces (Williams, 2024) - an issue with valence given the media's voyeuristic interest in stigmatized sexual practices. Consequently, researchers need to earn the trust of kink communities to gain access to the space to recruit participants to conduct research. While there are numerous examples of this approach being effective for kink (e.g., Carlström, 2023; Rubin, 1991), the high level of investment needed to create bonds can limit the amount of research conducted or mean that a particular sub-set of the population are recruited and leads to the second problem of often only recruiting people who identify as kinky.

The problem with conducting research on those who predominantly identify as kinky is that these individuals often strongly identify with the social aspects of kink and are part of kink communities (Fennell, 2022; Wignall, 2023; Zambelli, 2017), resulting in research having a skewed understanding of kinky individuals. This approach mirrors sexualities research that recruits people by identity ("do you identify as LGB") versus by desire or practices, with the former yielding fewer respondents who also report worse issues (Anderson & McCormack, 2016). Such a focus in kink research is similarly problematic as it fails to recognize the multiple components of kink, such as identity, behavior, and orientation (Williams & Sprott, 2022). Consequently, participants who engage in the social components of kink are often privileged and over-represented in research compared to those with kinky desires.

Given the difficulty engaging with kink subcultures, and the focus on community members, researchers have attempted to address these problems through using the internet to recruit participants; however, this has led to the creation of a third problem in kink research of an overreliance on FetLife. Rather than engage with the range of websites for kinky individuals, specific kinky socio-sexual networking sites (SSNS) have been used to recruit participants (e.g., Colosi & Lister, 2019; Hughes & Hammack, 2022; Jones, 2020). SSNS are similar to social networking sites (e.g., Facebook; Twitter/X) but cater to sexual subcultures and allow for sexual encounters (Wignall, 2017); kinky SSNS cater to kinky subcultures. These sites allow researchers to recruit kinky participants more easily, with the sites providing a large potential participant pool on a global scale, and often offering services to advertise studies to their members. Yet, research on kink has become over-reliant on recruiting through the biggest, predominantly heterosexual, kinky SSNS - FetLife. Indeed, Wignall (2023) argued that rather than providing generalizable insights into kink, such research only provides insight into FetLife users and strongly privileges people who are attached to a kink identity label. Similarly, the focus on particular aspects of kink culture also means that the broader dynamics of kinky peoples' lives are marginalized (McCormack et al., 2022). There is a need to recruit participants from other kink SSNS, and indeed beyond kink SSNS.

Measuring Kink Practice, Identity, and Desire

The problems outlined above raise the following issues: how best to recruit kinky participants and/or move beyond identity measures to include the study of kink in broader samples, and how to shift the focus for research on kink. A way of including participants for research on kink is needed which goes beyond recruiting participants who identify as kinky (via communities or through FetLife), to instead recruit participants who could be labeled as kinky through other determinants or measure kink without using self-identification in larger studies. These approaches require recognizing the diverse ways that kink is experienced: as a practice, identity, and desire. Developing a scale of kink that spans practice, identity and desire is significant because it addresses the issues raised above - it would enable better evaluation of diversity in recruitment beyond a focus on identity, with the ability to identify subsamples as kinky within broader population studies.

Regarding identity, while kink research over-samples by identity (people who are embedded in kink communities), the complexities of kink identity are often not examined in detail, and questions of identity can be downplayed in surveys. People who engage in kink may frame it as an important component of their identity, both as a sexual and a social identity (Hughes & Hammack, 2019), or it may not be important at all (Wignall, 2022). For some, kink is a sexual orientation, with some kinky people describing their sexual orientation as "kinky" over more common labels (e.g., gay, lesbian, bisexual), as the kink activities they engage in are more important than the gender of the person they engage in sex with (Williams & Sprott, 2022). For others, kink can be an important social identity, with their friendships and relationships deeply embedded within kink subcultures, attending kink events and engaging with kink SSNS as a way of developing social connections (Wignall, 2022).

Regarding practice (or behavior) and desire, one way to measure kink is through what activities a person engages in, and the frequency and recency (e.g., McCormack et al., 2022). As in sexualities research more broadly (Herbenick et al., 2022), this has value in reporting actual practices rather than idealized or fantasized desire. Yet it is also limited and one element of kink, as evidenced by far higher numbers of people reporting sexual fantasies rather than practice (Brown et al., 2020). People may not engage in kink for several reasons despite having kink desires, including being a monogamous, vanilla (non-kinky) relationship; cultural stigma or laws preventing the practice; health issues etc. As such, while practice is a key element of understanding sexualities, it is just one element of sexuality and must be explored alongside sexual desire.

The Present Study

While many measures exist to understand attitudes, practices, and desires related to sexuality (see Milhausen et al., 2020), there are limited validated measures related to kink that measure engagement and interest. One scale related to kink is the Attitudes About Sadomasochism Scale (ASMS) (Yost, 2010), however this focuses on perceptions and stereotypes toward kinky individuals, rather than focusing on kinky individuals. Another scale is tangential to research on kink, the Paraphilias Scale (Seto et al., 2012), but focuses on specific sexual behaviors and associated enjoyment/disgust. The MTC Sadism Scale recognizes the dimensionality of sexual sadism but is focused on non-consensual behaviors among sexual offenders (Longpre et al., 2019).

Most relevant is the BDSM Proclivity Scale (Boyd-Rogers et al., 2022), which uses five questions on a 7-point Likert scale to measure predisposition toward BDSM using very limited questions that focus on behavioral components of BDSM (e.g., "I have EXPERIENCE in either being sexually dominant with a TRUSTED partner or having a TRUSTED partner being sexually dominant, after we AGREED that either I or my partner would take control during the sexual interaction in a SAFE way"). However, this scale is limited in its application given its specific way of thinking about kink/BDSM and its focus on proclivity.

Accordingly, we developed the Kink Orientation Scale (KOS) as a measure of engagement in kink - this scale recognizes the complex nature of kink, allowing for the inclusion of people who engage in kink casually, who have sexual fantasies related to kink (even if they have never engaged in the practice), and who strongly resonate with a kink identity.

Method and Results

Adopting a modified form of Boateng et al.'s (2018) best for scale development, we a psychometric scale development across three phases: (i) item development, (ii) scale development, and (iii) scale testing which we discuss below. For this study, ethical approval was granted from Bournemouth University.

Phase 1: Item Development

The Kink Orientation Scale (KOS) was created through compiling a list of questions which would explore different aspects of kink - attitudes, practices, desires, and identities. In creating the KOS, and incorporating the different components of kink, we used the Revised Sociosexual Orientation Inventory (SOI-R) (Penke, 2011) as a basis. This is because the SOI-R provides an overall score for a concept of sociosexuality (i.e., willingness to engage in casual sex), as well as distinguishing between the behavioral, attitudinal, and desirable components of sociosexuality in a similar way that the KOS is intended to measure the attitudinal, practical, desirable, and identity-based components of kink.

Based on the lead author's expertise in the field of kink studies and following a review of key literature in the field, an initial list of 36 questions was created and these items were grouped around four aspects of kink: attitudes, practices, desires, and identity. These groupings relate to the three core elements of kink discussed above, alongside attitudinal elements which are also present in the SOI-R. Questions were based on common facets of kink (e.g., the importance of consent; stigmatized sexual practices; the pleasure of power dynamics). Through discussion with coauthors, some questions were removed due to repetition and the wording of some questions were changed for clarity. The preliminary scale consisted of 27 questions. All items were scored on a 7-point Likert scale (1 = Strongly disagree; 2 = Disagree; 3 = Somewhat disagree; 4 = Neither agree nor disagree; 5 = Somewhat agree; 6 = Agree; 7 = Strongly agree). Apart from two questions ("I would describe myself as kinky;" "My friends think that I am kinky"), questions did not directly ask about kink interests to prevent participants from knowing about the true intention of the study as participants may have responded differently if they knew the study was about kink (e.g., Fenton et al., 2001). To further disguise the rationale of the study, 14 general questions relating to sex were added to the scale.

To ensure that potential participants would understand the questions in similar ways, supporting construct validity, two focus groups were conducted; one with undergraduate psychology students (n = 5) who indicated no interest in kink, and another with self-identified kinky people (n = 6). Each focus

group lasted approximately 40 minutes and participants were asked to discuss the 27 questions and reach a consensus on what each question asked. All participants collectively understood the questions and so the wording of questions did not change.

Phase 2: Scale Development

Participants and Procedure

Two hundred university students completed a survey called "The Sexual Behaviour and Attitudes Survey" (SBAS) in exchange for course credit. All participants were at least 18 years of age. Participants were informed that the survey explored general attitudes toward sex and were not informed on the true nature of the study (i.e., to test the applicability of the KOS). Participants accessed the survey through Qualtrics (a survey hosting platform) and, after reading an information sheet and consenting to participate, were given access to the 41 item KOS (27 questions and 14 filler questions). The survey took approximately 10 minutes to complete. After the study, participants were told of the true nature of the study and given the opportunity to withdraw their data from the study; no students withdrew their data.

Statistical Analysis - Factor Analyses

To explore the dimensionality and factor structure of the KOS, we used a series of analyses on the 27 items generated using Stata/SE version 16.1. Exploratory factor analyses were conducted using polychoric correlations, and seven items were then excluded as either they had uniqueness values of >0.7, factor loadings < 0.3, or cross-loaded onto multiple factors. The remaining 18 items were then resubjected to principal component analysis and factor analysis.

The final model results of the principal component analysis and scree plot revealed five components with eigenvalues greater than 1.0, accounting for 58.1% of the variation in responses (see Figure 1). The EFA using polychoric correlations with five factors for the remaining 18 items indicated > 0.4 correlation between some items (e.g. I have niche sexual interests; I am part of a sexual subculture); thus, we applied a promax rotation. The factor analysis likelihood ratio test for model fit of the independent v. saturated model had a X^2 value of 1489.3, with a p-value of <.001. The full results of the polychoric factor analysis and factor loadings are displayed in Table 1. We further assessed reliability with a measure of Cronbach's alpha; the average interitem covariance was 0.58 and the scale reliability coefficient was 0.83.

Inspection of the Pattern Matrix showed seven items loaded onto factor one (I would describe myself as kinky, I am part of a sexual subculture, Friends describe as kinky, My sexual interests are constantly evolving, My sexual interests can be risky, Pain can be fun in a sexual context, I have niche sexual interests) which we labeled kink identity. Four items loaded onto factor two (Sex toys are important in sex, I have purchased items from a sex shop (offline or online), I have visited a sex shop (offline or online), I have researched my sexual interests) which we labeled as kink paraphernalia. Two items loaded onto factor three (I often talk about my sexual interests with my sexual partner, I know others with the same sexual interests as me) which we labeled kink community. Two items loaded onto factor four (I have outfits I wear when having sex, I like my sex to incorporate a power dynamic) which we labeled kink role *play.* Three items loaded onto factor five (*It's important to chat* with somebody before having sex with them, Casual sex is fun, Having chemistry with your sexual partner is important) which we labeled sexual communication.

Summary of Responses

The 18 items included in the five-factor scale were summed to create the preliminary KOS scale ranging from a possible 18-126 points, where 18 would be the "least kinky" and 126 would be the "most kinky;" the average possible score of this scale is

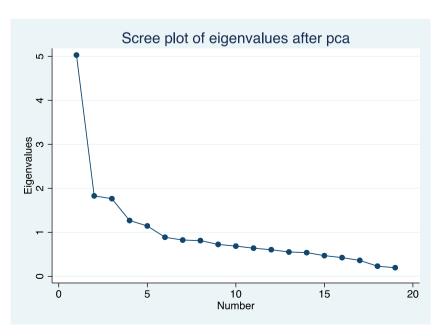


Figure 1. KOS scree plot of eigenvalues after PCA, the student sample (n = 200).

| Table 1, KOS EFA patter | | | . Ca., alaua aa ua u la /.a | 2001 |
|-------------------------|------------------------|---------------|-----------------------------|---------|
| Table 1. NOS EFA Datter | i iliatrix aliu iactoi | ioaumus amonu | i Student Samble (<i>n</i> | = 200). |

| Variable | Factor1 | Factor2 | Factor3 | Factor4 | Factor5 | Uniqueness |
|-------------|---------|---------|---------|---------|---------|------------|
| power | 0.0089 | 0.0787 | -0.0193 | 0.9455 | 0.1485 | 0.0873 |
| talk | 0.0669 | 0.3095 | 0.4263 | -0.0701 | 0.0226 | 0.5918 |
| self_kinky | 0.6491 | -0.1398 | 0.3714 | -0.1041 | 0.0601 | 0.3704 |
| chat_before | -0.0323 | 0.0145 | -0.0547 | -0.0842 | 0.5502 | 0.6669 |
| friends | 0.5622 | -0.0015 | 0.3798 | 0.0982 | -0.0304 | 0.3653 |
| evolving | 0.418 | 0.0105 | 0.1722 | -0.2234 | 0.2017 | 0.652 |
| risky | 0.6661 | -0.037 | 0.0359 | 0.1541 | -0.1992 | 0.4923 |
| pain | 0.3829 | 0.1221 | 0.158 | 0.196 | -0.0502 | 0.6494 |
| toys | 0.1096 | 0.5668 | -0.0291 | -0.0594 | -0.0334 | 0.6134 |
| casual | 0.021 | 0.0774 | 0.3986 | -0.2534 | 0.5178 | 0.471 |
| chemistry | -0.0585 | -0.0242 | 0.1888 | 0.1304 | 0.7982 | 0.3637 |
| subculture | 0.736 | 0.0399 | -0.1676 | 0.0112 | -0.1032 | 0.4774 |
| niche | 0.6871 | -0.1228 | -0.0393 | -0.0977 | 0.0637 | 0.5994 |
| outfits | 0.2965 | 0.2797 | 0.0542 | 0.3185 | 0.012 | 0.5932 |
| sexshop | -0.143 | 0.9187 | 0.0319 | 0.1288 | -0.0946 | 0.1914 |
| research | 0.2607 | 0.4562 | -0.1666 | -0.2392 | 0.111 | 0.5927 |
| sexshop2 | -0.064 | 0.8613 | 0.0484 | -0.0064 | 0.0559 | 0.2898 |
| same | 0.0357 | 0.025 | 0.695 | 0.0487 | 0.1483 | 0.4802 |

72. Of the 200 respondents, the KOS score was relatively normally distributed with a mean 60.7 (SD: 15.3), a minimum of 26 and a maximum of 100 (see Figure 2). To evaluate whether this score was statistically lower than the possible KOS average (72), we ran an independent one-sided sample t-test. The analysis revealed a highly significant difference, t(199) = -10.5, p < .01, indicating that the average KOS score of the student participants was significantly lower than the possible average.

Phase 3: Scale Testing

To test the scale's utility, we administered the scale to a kink-focused sample. After consultation with the analytic team, we updated the 18 KOS questions from a seven-point Likert-like scale to a five-point Likert-like scale (1 - Strongly disagree, 2 - Somewhat disagree, 3 - Neither agree nor disagree, 4 - Somewhat agree, 5 - Strongly agree). This was done to reduce participant decision making burden, reduce ambiguity in

responses, and to simplify the data analysis and interpretation (DeVellis & Thorpe, 2022). We also reordered and grouped questions based on perceived factors identified from phase 2.

Participants and Procedure

To test the KOS in a predominantly kink-focused sample, participants were recruited online through the kink socio-sexual networking site Recon. An advertisement to take part in the "Kink Health, Wellbeing, and Orientation Survey" was sent as a private message to all users who opted in for targeted advertisements with the platform; the survey was launched on 6th July 2024 and was open for one week. The survey was comprised of the KOS, questions on engagement with specific kink activities, and demographic information. Participants could enter a contact e-mail address to be entered into a prize draw for a £150 voucher for a popular kink store. Ethical approval was granted by the University of Brighton.

The survey was attempted by 1372 people. Our data team manually evaluated responses to ensure validity and included

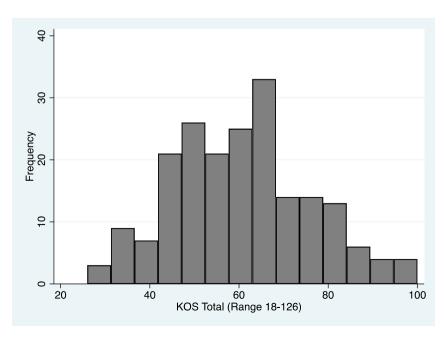


Figure 2. Total KOS scores among the student sample (n = 200).

a four-step data validation procedure. This included: 1) verifying survey completion rate/time; 2) ensuring the individuals completed an attention check ("select strongly disagree"); 3) evaluating validity of outliers (greater than two standard deviations total KOS score lower than the average); and 4) removing individuals who did not complete all 18 questions of the KOS scale. This resulted in a total of 1025 valid responses.

Statistical Analysis – Confirmatory Factor Analysis

Principal component analysis and its corresponding scree plot on the 18-item KOS scale revealed five components with eigenvalues greater than 1.0, accounting for 50.6% of the variation in responses (see Figure 3). We then used a factor analysis with polychoric correlations with a promax rotation due to the item correlations we observed in the EFA. The factor analysis likelihood ratio test for model fit of the independent v. saturated model had a X^2 value of 5177.1, with a p-value of <.01. The full results of the factor analysis and factor loadings are displayed in Table 2. We further assessed

reliability with a measure of Cronbach's alpha; the average interitem covariance was 0.14 and the scale reliability coefficient was 0.74.

Inspection of the Table 2 Pattern Matrix indicates three items loaded onto factor one (I would describe myself as kinky, I am part of a sexual subculture, My friends think I am kinky) which we retained from the original proposed factor Kink Identity. We also retained items from the Kink Community factor which now includes the four items (I often talk about my sexual interests with my sexual partner, I know others with the same sexual interests as me, I have outfits I wear when having sex, I have researched my sexual interests). Sexual Communication contains the same three items as the EFA suggested (It's important to chat with somebody before having sex with them, Casual sex is fun, Having chemistry with your sexual partner is important). However, a new factor emerged (My sexual interests are constantly evolving, My sexual interests can be risky, Pain can be fun in a sexual context, I have niche sexual interests, I like my sex to incorporate a power

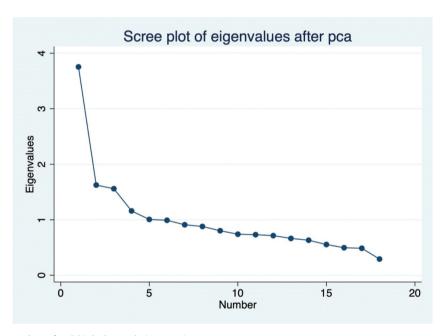


Figure 3. KOS scree plot of Eigenvalues after PCA, kink sample (n = 1025).

Table 2. KOS CFA pattern matrix and factor loadings among kink sample (n = 1025).

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Uniqueness |
|-------|----------|----------|----------|----------|----------|------------|
| KOS1 | 0.4956 | -0.0045 | 0.0144 | 0.2448 | -0.023 | 0.5459 |
| KOS2 | 0.5061 | -0.0286 | 0.26 | 0.0478 | -0.0308 | 0.5148 |
| KOS3 | 0.8212 | 0.1383 | 0.0007 | -0.183 | -0.001 | 0.3627 |
| KOS4 | -0.0145 | 0.1926 | -0.0154 | 0.2681 | -0.0263 | 0.8598 |
| KOS5 | 0.2003 | -0.0539 | -0.1005 | 0.4191 | -0.1763 | 0.6979 |
| KOS6 | 0.0704 | 0.0901 | -0.1556 | 0.5675 | 0.0171 | 0.6352 |
| KOS7 | 0.2552 | -0.1629 | 0.0505 | 0.3902 | 0.0173 | 0.7077 |
| KOS8 | 0.0364 | 0.2151 | -0.0962 | 0.232 | 0.137 | 0.8708 |
| KOS9 | 0.0318 | 0.9345 | -0.0454 | -0.0402 | -0.0698 | 0.156 |
| KOS10 | 0.1046 | 0.0837 | 0.311 | 0.123 | -0.0105 | 0.7505 |
| KOS11 | 0.2504 | 0.1592 | 0.3553 | -0.0176 | 0.094 | 0.5802 |
| KOS12 | 0.0398 | -0.0275 | 0.8519 | -0.0547 | -0.0537 | 0.3009 |
| KOS13 | 0.0056 | 0.0465 | 0.4104 | 0.0763 | 0.0348 | 0.7718 |
| KOS14 | -0.2272 | -0.0826 | 0.0624 | 0.7675 | 0.1363 | 0.5737 |
| KOS15 | -0.0301 | 0.0042 | -0.0417 | 0.0969 | 0.9046 | 0.2058 |
| KOS16 | -0.2090 | 0.1819 | 0.2137 | 0.1076 | -0.3995 | 0.7433 |
| KOS17 | -0.0443 | 0.0508 | 0.1651 | -0.0184 | 0.4424 | 0.7562 |
| KOS18 | 0.0453 | 0.8933 | 0.0016 | -0.0401 | 0.0738 | 0.1954 |

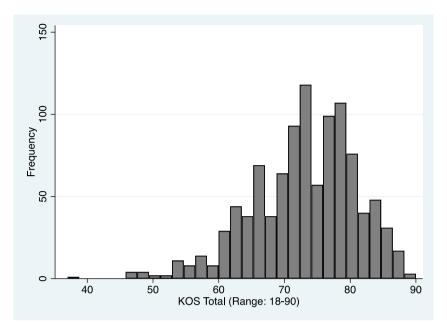


Figure 4. Total KOS scores among the kink sample (n = 1025).

dynamic) which we labeled Kink Practices. Lastly, two items strongly loaded onto the last factor (I have purchased items from a sex shop (offline or online), I have visited a sex shop (offline or online) which we also grouped with Sex toys are important in sex even with its low factor loading, which we labeled as Kink Paraphernalia, as per the original EFA.

Summary of Responses

The 18 items included in the five-factor scale were summed to test the updated KOS scale ranging from a possible 18–90 points, where 18 would be the "least kinky" and 90 would be the "most kinky" with 54 being the possible median score. Of the 1025 respondents, the KOS score was relatively normally distributed centered around the mean 73.1 (SD: 7.9), with a minimum of 37 and a maximum of 90 (see Figure 4). To evaluate whether this score (73.1) was statistically higher than the possible KOS average (54), we ran an independent one-sided sample t-test. The analysis revealed a highly significant difference, t(1025) = 77.7, p < .01, indicating that the average KOS score of the kink participants was significantly higher than the possible average.

Discussion

Human sexuality is increasingly recognized as an integral component of self-identity, and sexual satisfaction is an important factor in physical and mental wellbeing (e.g., Davison et al., 2009; Lorimer et al., 2023). Kink is an important aspect to many people's desires, practices, and communities (Paarnio et al., 2023; Schuerwegen et al., 2023), yet few scales are available to measure kink in a holistic manner. The aim of this study was to develop the psychometric properties of the Kink Orientation Scale (KOS), a novel short tool for measuring different aspects of kink sexuality. We developed an initial pool of 36 items, refined it to 27, and tested its properties. We used Explanatory and Confirmatory Factor Analyses to

determine the factor structure and dimensionality of the KOS which resulted in a 5-factor model of the 18 items (see Appendix for the final KOS).

The initial conception of the KOS with 27 items had four envisaged factors of kink: attitudes, practices, desires, and identity. However, our analysis showed that in the final 18 item version of the KOS, there were five factors: kink identity; kink paraphernalia; kink community; kink practices; and sexual communication. There are some clear overlaps between the envisaged and actual factors, with identity appearing in both, and practices mapping directly with practices as well as encapsulating components of attitudes and desires. The other factors (community, paraphernalia, and communication) are unsurprising: a strong kink identity is associated with community engagement (Damm et al., 2018); previous research has highlighted the importance of kink paraphernalia in definitions of kink (Wignall, 2022); communication is a cornerstone of kink engagement and is related to the importance of consent within kink practices (Williams et al., 2014).

It is notable that the summary of responses in both the student sample and the kink sample for the KOS showed an approximately normally distributed range of responses; however, the responses for the kink sample were unsurprisingly negatively skewed. Furthermore, when conducting independent t-tests, the mean score of the student sample (60.7) was statistically lower than the possible midpoint of 72 on a 126-point total KOS inventory, whereas the average score of the kink sample (73.1) was statistically higher than the midpoint of 54 on a 90-point total KOS inventory. This location on either side of the midpoint supports the notion that this is a meaningful statistical difference and not the result of any methodological changes.

These findings support the thesis that all individuals have some level of a kink orientation on a continuum (see Wignall, 2022), and is consistent with how sexual orientation is conceptualized and measured using validated scales (e.g., Kinsey et al., 1948; Savin-Williams, 2014). Future research could

obtaining this further, exploring scores on the KOS in representative samples from the general population alongside other continuum measures of sexuality.

The purpose of the KOS is two-fold: 1) to move beyond identity measures for studying kink to include people with kinky characteristics and/or a kink orientation who are not part of kink communities; 2) to enable a range of analyses of kink with other issues and factors. Regarding the first aim, the KOS seems to be effective in identifying aspects of kink attitudes, desire, practices, and identity. By identifying five distinct components, including paraphernalia, communication, and community, the scale has the potential to enable researchers to move beyond focus on purely identity or event participation. Importantly, the KOS does not rely solely on selfidentity questions ("Do you identify as kinky" or "Are you kinky"), addressing one of the issues of existing research on kink which over-samples people with kink identities.

Regarding the second aim, as a scale, the KOS can also be used alongside other scales and measures to examine for associations between kink and a range of factors. The higher the score on the KOS, the more likely an individual is to have a kink orientation, which we broadly define as interest or desire to engage in kink practices. We see this as a valuable opportunity for research on kink, allowing for important associations to be conducted between having a higher/lower kink orientation and numerous other variables, such as engagement with sexual health practices, risk taking (both sexual and nonsexual), personality characteristics, or biological markers. Indeed, the relatively short nature of the KOS (18 questions) also means that it is practicable to include in larger surveys, particularly if the focus is on sexuality more generally. Future research may also be able to identify potential cutoff points in which a person who is likely to be kinky may score, through administering the KOS on larger samples from the general population and larger kink samples.

There are limitations with this study and potential areas for further research on the KOS. Firstly, based on expert analytic advice described in the Methods, the number of responses for the KOS items was reduced from 7 to 5 (removing the options "agree" and "disagree") between phase 2 and phase 3, as these responses were arguably not distinguishable from the existing options "strongly" and "somewhat" agree or disagree. While we believe these changes have strongly improved the utility of the KOS both in terms of accessibility and options for analysis, they require a standardization of the results (such as using z scores) to compare findings between phase 2 and phase 3. We encourage future research to administer the KOS using 5-answer responses and similar grouping of questions for comparability.

Secondly, the sample in phase 2 consisted of 200 university students and does not provide a representative sample; indeed, university students may hold more sexually liberal attitudes toward sex (Twenge et al., 2015). As such, the KOS needs to be validated within a larger, representative sample from the general population to generate a baseline score for comparison. Relatedly, due to the recruitment method, phase 3 only predominantly consisted of kinky gay/bisexual men; therefore, the KOS needs to also be validated within other diverse kink samples.

Thirdly, we included two items (My sexual interests are constantly evolving, Sex toys are important for sex) in our final proposed KOS scale even though they had relatively low loadings (<0.3) and high uniqueness (>0.8) in the CFA. These items were retained due to their applicability and utility in phase 2, including their logical groupings with the other factor items in Kink Practices and Kink Paraphernalia, respectively. Additionally, we retained these items because we would like the KOS to be used in kink and non-kink focused samples and are attempting to engage non-kink community participants; we recognize that these two specific items appeared important in the non-kink sample. We still acknowledge this as a limitation of the KOS, but we are excited to explore how these items in the KOS load in future iterations of the continued development of the KOS.

Finally, although we used other kink scales as reference in Phase 1 of the development of our KOS, the purpose of our study was to establish and validate the KOS within a kink sample. Thus, the KOS was not compared quantitatively with other scales of a similar nature. As such, future research should explore how the KOS compares with other kink related scales, such as the BDSM Proclivity Scale and the Attitudes About Sadomasochism Scale, as well as other sexuality related measures.

The KOS also opens a range of potential future research opportunities for kink more broadly. The KOS would be a useful tool in attempting to understand the prevalence of kink in the general population, helping to potentially reduce stigma toward kink through recognition of its prevalence. Furthermore, the KOS enables a range of analyses that can provide further insight into kink and indeed extend research in growing areas (e.g., Wignall et al., 2023). Much kink research is currently based on self-identification, which provides categorical data limiting analyses; the KOS provides continuous data that would enable more sophisticated analysis, including correlations or regression analyses.

In conclusion, this study has developed the KOS as a novel short tool for measuring different aspects of kink sexuality. With growing interest in kink in sexology specifically, and social sciences more broadly, the KOS has the potential to advance research in these fields and provides a solution to what was a significant gap in psychometric measures of this social and sexual phenomena.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

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Appendix. The Kink Orientation Scale

"Please state how much you agree or disagree with the following statements". Statements should be ranked on a 5-point Likert Scale; 1 -Strongly disagree, 2 Somewhat disagree, 3 - Neither agree nor disagree, 4 - Somewhat agree, 5 - Strongly agree. Scores range from 18-90.

Questions 1, 2 and 3 refer to Kink Identity; questions 4, 5, 6, 7 and 14 refer to Kink Practices; questions 8, 9, and 18 refer to Kink Paraphernalia; questions 10, 11, 12 and 13 refer to Kink Community; questions 15, 16 and 17 refer to Sexual Communication.

- (1) I would describe myself as kinky.
- (2) I am part of a sexual subculture.
- (3) My friends describe me as kinky.
- (4) My sexual interests are constantly evolving.
- (5) My sexual interests can be risky.
- (6) Pain can be fun in a sexual context.
- (7) I have niche sexual interests.
- (8) Sex toys are important in sex.
- (9) I feel comfortable visiting a sex shop (offline and online).
- (10) I have researched my sexual interests.
- (11) I often talk about my sexual interests with my sexual partner.
- (12) I know others with the same sexual interests as me.
- (13) I have outfits I wear when having sex.
- (14) I like my sex to incorporate a power dynamic.
- (15) It's important to chat with somebody before having sex with them.
- (16) Casual sex is fun.
- (17) Having chemistry with sexual partner is important.
- (18) I feel comfortable purchasing items from a sex shop (offline and online)