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Changes in Sexual Desire and Behaviors among UK Young Adults During Social Lockdown Due to COVID-19

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ABSTRACT

This study examined self-reported changes in young adults' sexual desire and behaviors during the most significant social restrictions imposed to deal with COVID-19. Drawing on a survey of 565 British adults aged 18–32 collected at the peak of social lockdown restrictions, we document an overall decrease in sexual behaviors consistent with abiding by social restrictions. We found that the levels of sexual desire reported by women (but not men) decreased compared with reports of pre-lockdown levels. Participants in serious relationships reported more increases in sexual activity than people who were single or dating casually, and there were significant differences according to gender and sexual orientation. The perceived impact of subjective wellbeing of people with high sociosexuality scores was disproportionately associated with social lockdown but there was no effect for general health. Thus, the impact on sexuality and general wellbeing should be considered by policymakers when considering future social restrictions related to COVID-19 or other public health emergencies.

Introduction

The World Health Organization (2020) declared the novel coronavirus (COVID-19) a public health emergency of international concern in January 2020, before announcing a global pandemic in March 2020. These announcements led to the implementation of national and global policies to try and reduce the spread of the virus. One of the most common measures introduced by many governments was physical distancing and restrictions placed on people's social interactions. The UK entered lockdown on March 16th, 2020, following a steep rise in cases of COVID-19 in the preceding weeks. During lockdown, laws were implemented to allow only physical interactions between members of one's household, to limit leaving the home only for essential trips or exercise of no more than 1 hour, and to maintain a two-meter distance away from all others not within one's household (UK Government, 2020). Only essential shops could open, with schools and venues for social and community activity closed. Many people worked from home or lost their jobs, others were placed on furlough, and key workers had to continue to work as usual. Those with underlying health conditions faced further restrictions and had to engage in shielding behaviors (Smith & Spiegelhalter, 2020). Lockdown lasted until May 13th, 2020, when restrictions gradually eased, but physical distancing was still strongly encouraged; a second one-month lockdown was introduced in November 2020, with somewhat looser restrictions, such as schools remaining open; a third lockdown was introduced in December 2020 with a "roadmap" out of lockdown from the March 8th, 2021.

While temporary, these extraordinary restrictions on individual freedoms have the potential to significantly impact

people's health and wellbeing (Jaspal & Breakwell, 2020). Immediately implemented medical and social policy interventions focused predominantly on those deemed most at risk, including the elderly, men, ethnic minorities, and people with underlying medical conditions (Jordan et al., 2020; Public Health England, 2020; Takahashi et al., 2020). However, COVID-19 and associated policy actions impact other demographic groups. Young adults have received less attention in relation to COVID-19, yet face many transitions and uncertainties related to education, employment, housing, and social and romantic relationships (Arnett, 2000). These can be stressful and exacerbated by the uncertainties and dangers of COVID-19 (Shanahan et al., 2020), with some evidence that young adults report more stress than older adults (Park et al., 2020) and disproportionate impact on earnings for young adults compared to other age groups (ONS, 2021).

The current study examined changes in sexual desire and behaviors in social lockdown among young adults, aged 18–32, in the UK. Specifically, it addressed whether young adults' sexual desire and sexual behaviors changed during social lockdown; whether these changes were linked to general health and subjective impact on wellbeing; and whether they are moderated by gender, sexuality, romantic relationship status and permissive attitudes toward casual sex.

The Impact of COVID-19 on Sexuality

COVID-19 and the social regulations related to it disproportionately impact some groups, including the elderly, people with underlying health conditions and black and ethnic

minority communities (Public Health England, 2020). Women might be more likely than men to have specific negative experiences of lockdown measures (Gausman & Langer, 2020), including risk of violence in the home (Usher et al., 2020) and increased childcare demands as a result of the temporary closure of nurseries and schools (Collins et al., 2021). Sexual minorities may have faced increased stressors if they returned to live in a family home where they were either at risk or felt obligated to hide their sexuality (Jowett, 2020). Similarly, social distancing measures may also increase feelings of loneliness (Aarts et al., 2015), particularly for single people and couples living apart (known as Living Apart Together [LAT]; Levin, 2004), due to the decrease in opportunities for physical and social intimacy (Lehmiller et al., 2020). Greater feelings of loneliness, which are associated with decreased physical health (e.g., Hawkey et al., 2003) and poorer health-related quality of life (Li & Wang, 2020), may be exacerbated through social lockdown, including for young adults (Matthews et al., 2017).

Romantic relationships are one of the most robust predictors of health and wellbeing (e.g., Pietromonaco & Beck, 2019; Raque-Bogdan et al., 2011). Strong and positive relationships serve as significant protective factors for health and wellbeing during times of stress (Pietromonaco & Collins, 2017), meaning that situations that strain intimate relationships have the potential to weaken general health and wellbeing. Aside from group-specific disparities, social distancing measures impacted romantic and sexual relationships, potentially placing additional stress on couples that live together (Overall et al., 2020). LAT couples in particular were mandated to cease all physical contact and most in-person social contact. Early evidence suggested that reported COVID-19-related stressors were associated with poorer relationship quality and increased partner conflicts, but that perceived partner responsiveness was a mitigating factor (Balzarini et al., 2020). However, given the increasing number of non-cohabiting relationships in the UK (Duncan et al., 2013), it is unclear whether all forms of relationships in the context of COVID-19 are protective in the way the previous literature has suggested.

An additional factor in relationship satisfaction is one's willingness to engage in casual sex (French et al., 2019), known as sociosexuality (Simpson & Gangestad, 1991). People who enjoy casual sex ("unrestricted" sociosexuality) can experience greater relationship dissatisfaction in marriage (French et al., 2019), although this is moderated by relationship type and communication within a relationship (Rodrigues et al., 2017). Furthermore, casual sex is positively associated with well-being for people with unrestricted sociosexuality (Vrangalova & Ong, 2014), suggesting that restrictions on such behaviors may impact negatively on these individuals. Given that lockdown measures effectively criminalized casual sex between non-cohabiting individuals, there is the potential for greater impact on single individuals with unrestricted sociosexuality.

Little is known about the perceived impact of COVID-19 on sexual behaviors. A preliminary report from China suggested a decrease in the number of sexual partners among young people, with a decrease in sexual frequency across relationship types (Li et al., 2020). People who engaged in "risky" sexual

behaviors (defined in the study as inconsistent condom use, "casual" sexual partnerships, or multiple sexual partnerships) significantly reduced these behaviors during lockdown. A reduction in sexual desire attributed to the psychological stress of COVID-19 occurred for 25% of participants, yet 18% of men and 8% of women reported an increase in sexual desire. In the US, Lehmiller et al. (2020) found that social distancing rules resulted in a decline in sex life for half of participants; however, 20% of the sample also reported an expansion in their sexual repertoires, including novel uses of technology. Those without a live-in partner were most likely to try new activities, which explained why more younger than older participants tended to report trying new sexual activities. Similarly, a recent study suggested that 39.5% of gay and bisexual men continued to have casual sex despite lockdown restrictions (Shilo & Mor, 2020), with higher rates among single, younger men. In summary, these findings suggest possible gender differences in sexual desire and using technology to cope with disruptions of sexual routines, but additional work is necessary to illuminate these patterns, including accounting for sociosexuality.

Scant research has occurred within the UK on COVID-19 and sexuality. One preliminary study, with a sample of 868 adults, reported 39.9% of the sample engaging in sexual activity (classified as sexual intercourse, masturbation, petting or fondling) during 1 week of lockdown (Jacob et al., 2020). Variables significantly associated with continued sexual activity during social lockdown included being male, a younger age, being married or in a domestic partnership. However, the study did not gather self-report data on the association of lockdown with the specific sexual behaviors engaged in, or changes in sexual desire, relative to pre-lockdown levels, and assessed sexual activity immediately after lockdown rather than toward the end. A YouGov survey on 11,936 adults documented a decrease in sexual activity across all ages (Nolsoe, 2020). The survey suggested a negative association between social isolation and young UK adults' mental and physical health, but the extent to which these declines may be linked to health, changes in subjective wellbeing, and intimacy is unclear.

Aims of the Present Study

Research into the impact of COVID-19 on sexuality has focused on self-reported changes in sexual behaviors in response to the immediate restrictions of lockdown, overlooking the perceived impact on sexuality after weeks of physical/social distancing. In this study, we investigated the association between social lockdown and (a) perceived changes in levels of sexual desire; (b) changes in self-reported sexual behaviors; and (c) whether levels of sociosexuality and the changes in sexual desire were predictive of general health and a perceived impact on subjective wellbeing. For all analyses, we anticipated significant interactions and associations with gender, living arrangement, and relationship status.

First, changes in sexual desire were examined. To quantify the perceived impact of COVID-19 restrictions, we measured both retrospective sexual desire prior to the lockdown period and sexual desire experienced during the lockdown through self-report data. Based on Li et al.'s (2020) recent findings and

the additional unpaid labor placed on women during COVID-19 (Craig & Churchill, 2020), we also expected any reduction in sexual desire throughout the lockdown period to be associated with women more than men. Furthermore, we investigated whether an individual's living situation (e.g., living with a partner, alone, or with friends or other relatives) influenced these changes.

Second, we explored how sexual behaviors changed during social lockdown. Following Li et al. (2020) and Lehmillier et al. (2020), we expected to see differences in frequencies of sexual behaviors. Given physical distancing protocols, we anticipated that participants with long-time partners would report more sexual activity than participants who were single or dating casually. We also expected a significant association between living arrangement and increases in sexual activity.

Finally, we examined whether sexual desire and sociosexuality were predictors of general health and change in subjective wellbeing. We hypothesized that people with greater levels of sexual desire and, separately, unrestricted sociosexuality would report lower levels of general health and also report a greater negative impact on their self-reported subjective wellbeing. We also expected living status to mitigate this, with people living with their partner reporting less negative perceived impacts.

Method

Procedure

Participants completed surveys between the 14th and 18th May, 2020, during which time the strictest social lockdown measures had been in place for approximately 7 weeks. The survey was advertised to participants on *Prolific*, an online participant recruitment website used for academic surveys and market research. Participants were given the option to take part in a study titled *The Impacts of Social Isolation on Sexual Well-being and Intimacy*. Inclusion criteria specified participants must be living in the UK at the time of completing the study and aged between 18 and 32 years. We adopted a broad categorization of young adulthood (18–32), recognizing that structural shifts related to job security, house ownership and raising families means that the majority of people in their early thirties do not own a home (ONS, 2020) and that the late twenties is still a period of uncertainty and exploration for many people. This period is often characterized as *emerging adulthood*, which initially focused on 18- to 25-year-old people (Arnett, 2000), but has expanded to include “approximately 18 through 29 years” (SSEA, 2014).

After agreeing to participate, participants were redirected to *Qualtrics*, a survey hosting platform, presented with an information sheet, and were required to confirm consent to access the survey.

The survey began with general demographic questions before asking questions about a range of social and sexual behaviors, both at the time and retrospectively prior to lockdown. For the purpose of this study, only questions related to demographics, general health and perceived impact on subjective wellbeing, sexual behaviors pre- and during social lockdown, sexual desire pre- and during lockdown, and sociosexuality are reported. More information on these questions is provided below.

Participants took between 20 and 45 minutes to complete the survey. Upon completion, participants were redirected back to *Prolific*, and reimbursed £3.75. Ethical approval was granted from Bournemouth University Research Ethics Committee.

Participants

Five-hundred ninety-two participants were recruited. Data for 27 participants were removed prior to analysis; 25 participants had completed less than 75% of the online survey and two participants had incorrectly inputted their age. This final sample consisted of 565 participants, comprising 338 cisgender women, 220 cisgender men, five non-binary participants and two non-respondents. Mean age was 25.35 years ($SD_{age} = 4.13$). Participants belonged to the following ethnic groups: White (British, Irish or other; $n = 464$; 82.12%), South Asian ($n = 38$; 6.73%), mixed ethnicity ($n = 28$; 4.96%), African/Caribbean ($n = 18$; 3.19%), and other ethnicity ($n = 17$; 3.19%). Most of the sample identified as heterosexual ($n = 446$; 78.94%), with 41 participants (7.26%) identifying as mostly heterosexual, 50 participants (8.85%) identifying as bisexual, 20 participants (3.54%) identifying as gay/lesbian, and six participants (1.06%) identifying as mostly gay/lesbian. One participant identified as pansexual. See Table 1 for additional demographic information.

Measures

Sexual Desire Inventory

Participants completed the Sexual Desire Inventory-2 (SDI-2; Spector et al., 1996). The SDI-2 consists of 14 items to assess general sexual desire. Items 1, 2 and 10 (e.g., “During an average month/the last month how often have you had sexual thoughts involving a partner?”) are scored on an 8-point Likert scale from 0 (*not at all*) to 7 (*more than once a day*). Item 14 is scored on an 8-point Likert scale from 0 (*forever*) to 8 (*less than 1 day*). Items 3–7 (e.g., “When you first see an attractive person, how strong is your sexual desire?”) are scored on a nine-point Likert scale from 0 (*no desire*) to 8 (*strong desire*).

Table 1. Sociodemographic characteristics of participants (N = 565).

Variable	<i>n</i>	%
Education Level		
Degree	248	43.9
A-level	151	26.7
Postgrad	106	18.8
GCSE	45	8.0
PhD	9	1.6
Unknown	6	1.1
Relationship Status		
Serious	341	60.4
Single	184	32.6
Casual	38	6.7
Unknown	2	0.35
Currently Living With		
Partner	234	41.4
Family or Children	214	37.9
Friends or Others	58	10.3
Alone	37	6.5
Other	22	3.9

Percentages may not total 100% due to rounding. Self-reported gender, ethnicity, and sexual orientation reported in the text. Current living situation was condensed from additional categorical choices in the original survey.

Items 8 and 12 (e.g., “During an average month/the last month how important is it for you to fulfill your desires to behave sexually by yourself?”) are scored on a 9-point Likert scale anchored from 0 (*not important at all*) to 8 (*extremely important*). Items 9 and 13 (e.g., “Compared to other people of your age and sex, how would you rate your desire to behave sexually by yourself during an average month/the last month?”) are scored on a 9-point Likert scale anchored from 0 (*much less desire*) to 8 (*much more desire*). Possible aggregate scores on the scale range from 0 to 109, with higher scores indicating a heightened level of sexual desire. The factor solution comprised two sub-facets: sexual desire for others (dyadic desire) and desire for sexual activity with oneself (solitary desire).

Participants completed the SDI-2 twice: (a) imagining their sexual desire before social lockdown measures and (b) rating their current levels of sexual desire. As such, participants were not directly reporting on the perceived impact of lockdown on their desires but perceived change over the period. Wording of the questions was adapted where applicable (e.g., *during the last month* changed to *during a typical month*). Cronbach’s alpha returned acceptable reliability for the pre-lockdown ($\alpha = .89$) and during-lockdown questionnaires ($\alpha = .92$).

Sexual Behaviors Catalog

Participants were presented with a list of sexual behaviors (solo/mutual masturbation; sexual intercourse with a partner/non-partner; solo/mutual use of sex toys; solo/mutual pornography viewing; sexting with a partner/non-partner; sent nude pictures to a partner/non-partner; and role played with a partner/non-partner) and asked to select whether they had engaged in each behavior (a) prior to lockdown and (b) during lockdown, through marking a checkbox. If the participant answered affirmatively to both options, they were prompted to indicate whether they had engaged in the behavior more or less during lockdown, again through marking a checkbox. For the purposes of this study, this set of questions has been labeled the *sexual behaviors catalog*.

Sociosexuality Scale

Participants completed the nine-item Sociosexual Orientation Inventory – Revised (SOI-R; Penke & Asendorpf, 2008), which we used as our measure of sociosexuality. The SOI-R includes three items, assessing previous behaviors (e.g., “With how many partners have you had sexual intercourse in the past 12 months?”), attitudes toward casual sex (e.g., “Sex without love is O.K.”), and sexual desires (e.g., “In everyday life, how often do you have spontaneous fantasies about having sex with someone you have just met?”). Participants rated each item using a 9-point Likert-type scale anchored numerically for previous behaviors, partially anchored from 1 (*strongly disagree*) to 9 (*strongly agree*) for nonmonogamy attitudes, and fully anchored from 1 (*never*) to 9 (*at least once a day*) for sexual desires. The scores for all nine items were aggregated, with higher scores indicative of a heightened global sociosexual orientation (possible range of scores: 9–81). Cronbach’s alpha in the present study for the total scale score ($\alpha = .81$), and scale sub-facets (behavior: $\alpha = .76$; attitude: $\alpha = .74$; desire: $\alpha = .85$), were acceptable.

Health and Wellbeing

Participants were asked about their overall health using the general health question from the Short-Form-36 (Ware et al., 1993), an accurate measure of self-rated health (Cohen et al., 2015): “In general, would you say your health is: excellent; very good; good; fair; poor.” To facilitate an exploratory investigation of the perceived impact of the extraordinary restrictions on subjective wellbeing, participants were asked to rate the extent to which the current pandemic was impacting their sense of wellbeing on a scale from 0 (*not impacting at all*) to 100 (*impacting a lot*).

Data Analysis

Descriptive and inferential analyses were conducted. For changes in sexual desire, a multifactorial mixed 3 (Living status: partner, other family, alone; between) \times 2 (Sexual desire time-point: pre lockdown, during lockdown; within) \times 2 (Gender: men, women; between) analysis of variance (ANOVA) was performed on sexual desire ratings. Significant omnibus interactions were followed by paired and independent samples *t*-tests to compare pre- and during-lockdown sexual desire levels for both men and women.

To examine changes in sexual behaviors, an R script determined how many sexual behaviors increased per participant, resulting in a score ranging from 0 to 14. The score was used as a continuous measure of increased sexual activity during lockdown. Independent samples *t*-tests were conducted to evaluate whether sexual activity differed between (a) participants in a serious relationship versus those who were single or dating casually, (b) women versus men, and (c) heterosexual people versus lesbian, gay, and bisexual (LGB; also included pansexual) people. The grouping for the latter analysis was necessary for assumption tenability. Two participants were removed from the relationship status analysis due to missing data ($n = 563$). All assumptions were tenable except for the assumption of normality: relationship status, $D(563) = 0.15, p = .005$; gender, $D(560) = 0.18, p < .001$; sexual orientation: $D(565) = 0.15, p = .03$. However, given the large sample sizes per group, the tests were assumed to be robust to violations of normality (Rovai et al., 2014). Another assumption exception was Levene’s test for gender, $F(1, 558) = 9.32, p = .002$, and sexual orientation, $F(1, 563) = 11.37, p < .001$; therefore, equal variances were not assumed for these mean difference tests. Additionally, a one-way ANOVA was conducted to evaluate the null hypothesis that increases in sexual activity did not differ by living arrangement (friends or others, partner, family or children, alone, other).

To assess whether changes in desire and levels of sociosexuality predicted general health and perceived impact on subjective wellbeing, a series of chi-square tests and regression analyses were conducted. Specifically, we investigated whether during-lockdown SDI-2 (i.e., sexual desire) and SOI-R (i.e., sociosexuality) predicted general health using ordinal regression analyses, and whether they predicted perceived change in subjective wellbeing using stepwise multiple regression analysis. We first examined these relationships in the sample overall; we also examined men and women separately, in light of previous research regarding sex differences in sociosexuality. Finally, we assessed whether the separate facets of the SOI-R

predicted perceived change in subjective wellbeing in men and women separately to examine the nature of any relationships present. We conducted data screening measures to ensure data complied with assumptions of ordinal and multiple regression analyses; specifically, we examined the assumption of proportional odds, absence of multicollinearity, VIF and Tolerance ranges, and collinearity diagnostics. All these assumptions were met. Regression analyses were then repeated separately for living situation to examine whether SDI-2 and SOI-R predicted general health and perceived change in subjective wellbeing differently according to living situation. Finally, we repeated these regression analyses separately by sexual orientation. Owing to small numbers of some sexual orientation categories, we amalgamated the groups into heterosexual or LGB (including pansexual).

Results

Changes in Sexual Desire

We examined whether level of sexual desire increased or decreased during lockdown, compared to a pre-lockdown baseline, and whether such changes interacted with gender and the living situation of individuals. Fifty-five participants were excluded because they did not complete all questions on the SDI-2 questionnaires. From the remaining participants, an additional 43 participants were excluded because it was not possible to determine whether they currently lived with a partner. A further four participants were excluded because they did not state their gender or indicated non-binary gender. Therefore, a total of 467 participants remained (193 men and 274 women). The mean SDI-2 and SD scores are summarized in Table 2.

The multifactorial ANOVA revealed a main effect of sexual desire, $F(1, 461) = 11.07, p = .001, \eta^2 = .02$, a main effect of gender, $F(1, 461) = 12.87, p < .001, \eta^2 = .03$, but no main effect of living status, $F(2, 461) = 0.30, p = .739, \eta^2 = .001$. The analysis also found an interaction between sexual desire and gender, $F(1, 461) = 6.22, p = .013, \eta^2 = .01$. For women, a paired samples t -test showed that the level of sexual desire reduced during lockdown compared to pre-lockdown, $t(273) = 5.43, p < .001, dz = 0.33$. Men showed a similar pattern of change, but this difference did not reach significance, $t(192) = 1.95, p = .053, dz = 0.14$.

In addition, an SDI-2 change score was calculated by subtracting score “before lockdown” from score “during lockdown,” and the degree of change (i.e., difference scores) was compared using an independent samples t -test. This analysis showed a larger decrease in sexual desire in women ($M = -4.51,$

$SD = 13.76$) compared to men ($M = -1.70, SD = 12.12$), $t(465) = 2.29, p = .023, d = 0.22$.

Results from an independent samples t -test showed that men reported overall higher sexual desire compared to women at the pre-lockdown baseline, $t(465) = 5.37, p < .001, d = 0.50$, and during lockdown $t(465) = 5.58, p < .001, d = 0.53$. No statistically significant interactions were observed between sexual desire and living status, $F(2, 461) = 1.41, p = .246, \eta^2 = .006$, gender and living status, $F(2, 461) = 0.86, p = .425, \eta^2 = .004$, nor between all three factors, $F(2, 461) = 1.21, p = .300, \eta^2 = .005$.

In summary, men reported higher sexual desire levels compared to women both before and during lockdown. Women showed a significant reduction in levels of sexual desire overall during lockdown and men showed a similar trend which did not reach significance. Living status had no detectable effects on sexual desire levels either pre- or during-lockdown and did not interact with gender.

Changes in Sexual Behaviors

We explored changes in sexual behaviors using the sexual behaviors catalog. As shown in Table 3, the overall rates of all sexual behaviors, measured dichotomously, reduced during social lockdown. For example, 68 people (12.04%) had intercourse with somebody not their partner before lockdown, and only 8 people (1.42%) did this during lockdown.

Participants also reported the frequency of occurrence of different sexual behaviors. Among participants who continued to engage in sexual activity, 52.04% reported an increase in at least one of 14 sexual activities: 145 people (25.66%) reported more frequently masturbating on their own, 114 people (20.18%) reported having more intercourse with their partner, and 110 people (19.47%) reported watching more pornography on their own. However, the same three sexual activities also decreased in frequency for some participants, with 188 people

Table 3. Sexual behavior catalog, with frequency of engagement in sexual behaviors and changes in occurrences.

Activity	Engaged before lockdown		Engaged during lockdown		Increased during lockdown		Decreased during lockdown	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Solo Masturbation	414	73.27	354	62.65	145	25.66	141	24.96
Mutual Masturbation	221	39.11	129	22.83	74	13.10	109	19.29
Intercourse with Partner	343	60.71	199	35.22	114	20.18	188	33.27
Intercourse with Someone Else	68	12.04	8	1.42	3	0.53	98	17.35
Solo Sex Toy Use	152	26.90	112	19.82	48	8.50	91	16.11
Sex Toy Use with Partner	144	25.49	73	12.92	37	6.55	105	18.58
Solo Porn Use	322	56.99	251	44.42	110	19.47	122	21.59
Porn Use with Partner	88	15.58	41	7.26	20	3.54	82	14.51
Sexted Partner	193	34.16	110	19.47	78	13.81	99	17.52
Sexted Someone Other than Partner	37	6.55	27	4.78	22	3.89	64	11.33
Sent Nude Selfies to Partner	156	27.61	82	14.51	61	10.80	86	15.22
Sent Nude Selfies to Someone Else	37	6.55	27	4.77	22	3.89	64	11.33
Role Play with Partner	88	15.58	43	7.61	30	5.31	88	15.58
Role Play with Someone Else	23	4.07	6	1.06	9	1.59	61	10.80

Table 2. Descriptive statistics for the SDI-2 and SOI-R.

Scale	<i>M</i>	<i>SD</i>	Range
SDI-2			
Pre-lockdown	58.3	17.4	0–96
During lockdown	54.5	22.2	0–103
SOI-R global score	32.9	12.1	9–70
Behavior facet	7.8	4.88	3–27
Attitude facet	16.5	5.91	3–27
Desire facet	8.82	5.27	3–25

(33.27%) having less sex with their partner, 141 people (24.96%) masturbating alone less, and 122 people (21.59%) watching less pornography alone. Increases in sexual intercourse with a partner and increases in solo masturbation were not associated, $X^2(1) = 0.13, p = .718$. Using sexual activity as a continuous measure (described in data analysis section), the difference in increases in sexual activity between participants in serious relationships ($M = 1.52, SD = 1.92$) and those in casual relationships or single ($M = 1.18, SD = 1.72$) was significant, $t(561) = 2.17, p = .03, d = 0.19$. Participants in serious relationships reported more increases in sexual activity than people who were single or dating casually; the magnitude of the difference was small (Cohen, 1988).

In terms of gender, the difference in sexual activity increases between men ($M = 1.76, SD = 2.06$) and women ($M = 1.10, SD = 1.61$) was significant, $t(389.7) = 4.04, p < .001, d = 0.35$. Men reported more increased sexual activity than women and the difference approached a medium effect size. In terms of sexual orientation, LGB participants ($M = 1.93, SD = 2.36$) reported a significantly greater increase in sexual activity than heterosexual people ($M = 1.23, SD = 1.66$), $t(150.6) = 3.04, p = .003, d = 0.31$. Exploring the impact of living arrangement, results from the one-way ANOVA were not significant, $F(4, 560) = 0.76, p = .549$. There was no evidence that increases in sexual activity were significantly different by one's living arrangement, most likely attributable to inclusion of solitary and mutual sexual behaviors and supported by the fact that increases in masturbation were by people who did not report increased sex with a partner.

In summary, rates of sexual behaviors reduced overall during lockdown, some substantially. For participants who continued to engage in sexual activity, over half reported an increase in at least one sexual activity. Increases in sexual activity were predicted by relationship status, but with a small effect size. Men and LGB individuals reported greater increases in sexual activity than women and heterosexuals, respectively.

Predicting General Health and Perceived Impact on Subjective Wellbeing

We examined whether levels of sexual desire and sociosexuality predicted general health and the perceived impact of the COVID-19 lockdown on subjective wellbeing separately. During-lockdown SDI-2 scores and global SOI-R did not predict general health, $X^2(2) = 1.07, p = .585$ in the sample overall, nor for men and women separately ($X^2_{men}(2) = 1.86, p = .395$; $X^2_{women}(2) = 1.74, p = .419$).

Neither the during-lockdown SDI-2 ($t = 0.44, p = .661$) nor SOI-R ($t = 1.37, p = .171$) predicted the perceived impact of the pandemic on subjective wellbeing in the sample overall; the model was not significant, $F(2, 559) = 1.44, p = .239$. For women, global SOI-R scores ($t = 3.44, p = .001$) positively predicted the perceived impact of the pandemic on subjective wellbeing but SDI-2 scores did not ($t = 0.94, p = .346$). For men, neither of the predictors were significant. The overall model for women was significant $F(1, 336) = 11.84, p = .001$, and explained 3.4% of the variance in the data. The coefficients for the significant female model are shown in Table 4.

We then examined whether the separate subscales (SOI-attitudes, SOI-behaviors, and SOI-desires) of the SOI-R predicted subjective wellbeing for men and women separately. For women, SOI-desires ($t = 3.35, p = .001$) positively predicted self-reported subjective wellbeing scores; during-lockdown SDI-2 score ($t = 0.83, p = .408$), SOI-behaviors ($t = 0.74, p = .462$), and SOI-attitudes ($t = 1.64, p = .102$) were not significant predictors and therefore excluded from the final significant model, $F(1, 336) = 11.22, p = .001$, which explained 3.2% of the variance in the data. However, breaking down the facets of the SOI-R changed the men's results. That is, SOI-attitudes ($t = -3.02, p = .003$) negatively predicted the self-reported impact on wellbeing scores, while SOI-desires ($t = 2.55, p = .012$) positively predicted well-being scores; SDI-2 scores ($t = 1.24, p = .216$) and SOI-behavior ($t = 0.97, p = .336$) did not. The final model was significant, $F(2, 216) = 5.93, p = .003$, and explained 5.2% of the variance in the data. The coefficients are shown in Table 4.

When these analyses were conducted separately by living situation, the measures did not predict general health for people living alone, $X^2(2) = 4.51, p = .105$, with their partner, $X^2(2) = 2.69, p = .261$, or living with other adults, $X^2(2) = 1.48, p = .478$. The measures also did not predict the perceived impact of the pandemic on subjective wellbeing in people living alone or with their partner. However, SDI-2 during lockdown ($t = 2.90, p = .004$) positively predicted the perceived impact of the pandemic on subjective wellbeing in participants living with other adults. This model was significant, $F(1, 241) = 8.38, p = .004$, and explained 3.4% of the variance in the data.

Finally, we repeated these analyses by sexual orientation. SDI-2 during lockdown and SOI-R were not significant predictors of general health for heterosexual people, $X^2(2) = 1.02, p = .601$, or LGB people, $X^2(2) = 2.16, p = .339$. Neither SDI-2 during lockdown nor SOI-R were significant predictors of self-reported wellbeing for heterosexual people. For LGB people, only SDI-2 during lockdown was significant ($t = 2.47, p < .001$); SOI-R ($t = -0.06, p = .952$) was not significant and was excluded from the final model: $F(1, 76) = 6.11, p = .016$, which explained 7.4% of the variance in the data.

In summary, sexual desire during lockdown and global sociosexuality scores did not predict general health or perceived impact on subjective wellbeing in general. However,

Table 4. Stepwise regression coefficients.

Variable	B	SE B	β
Association of SOI-R with Wellbeing in Women			
Constant	52.58		
Global SOI-R	0.33	0.96	0.18
Association of the Pandemic with Wellbeing by SOI-R Subscale			
Women			
Constant	55.63	2.20	
SOI-desires	0.83	0.25	0.18
Men			
Constant	61.43	5.69	
SOI-attitudes	-0.98	0.32	-0.21
SOI-desires	0.79	0.31	0.18
Association of SDI-2 with Wellbeing in People Living with Other Adults			
Constant	48.62	3.76	
SDI-2 during	0.18	0.06	0.18

sociosexuality predicted perceived impact on subjective well-being for women, but not for men. Analysis of the facets of sociosexuality showed that only the desires facet predicted perceived impact on subjective wellbeing for women, and that attitudes and desires facets predicted perceived impact for men. For LGB people, only sexual desire during lockdown predicted the perceived impact on subjective wellbeing.

Discussion

Social policy measures put in place to deal with COVID-19 have had profound social and economic consequences (e.g., Ali & Alharbi, 2020). The impact such measures have had on sexuality has received little attention, although initial exploratory studies document changes in desires and sexual behaviors (Lehmiller et al., 2020; Li et al., 2020; Stephenson et al., 2020). The current study drew on a survey of 565 young adults living in the UK ($M_{age} = 25.35$, $SD_{age} = 4.13$) to examine changes in sexual desire and behaviors during social lockdown, with data collection occurring at the end of the period of the strictest social lockdown restrictions. Men reported higher sexual desire levels compared to women both before and during lockdown. Women showed a significant reduction in levels of sexual desire overall during lockdown; men showed a similar trend, but this did not reach statistical significance. Living arrangement (i.e., friends or others, partner, family or children, alone, other) had no detectable association with sexual desire levels either pre-lockdown or during lockdown and did not interact with gender.

Regarding sexual behaviors, men and LGB people reported significantly more increases in various sexual behaviors than women and heterosexual people, respectively, during social lockdown, in the context of a general decrease in reported sexual behaviors during the lockdown. Participants in relationships reported more increases in various sexual behaviors during social lockdown than those who were single or dating casually.

Lastly, general health and changes in subjective wellbeing were not predicted by sexual desire and sociosexuality scores for men or women, overall. However, sociosexuality significantly predicted self-reported wellbeing during social lockdown for women, but not for men. Further analysis showed that it was the desire aspect of sociosexuality which was associated with perceived impact on subjective wellbeing – those with high levels of desire for casual sex reported a greater negative impact on their self-reported levels of wellbeing than those with less desire for casual sex.

The gender differences found in some analyses (women reporting lower sexual desire levels than men both during and prior to lockdown and reporting a greater reduction in levels of sexual desire) are consistent with other COVID-19 research (Li et al., 2020). This could be due to increased levels of stress for women as a result of additional domestic labor (e.g., Collins et al., 2021) and may be associated with other symptoms emerging as a result of the pandemic and social restrictions. For example, increases in anxiety and depression have been recorded during the pandemic among both men and women and are associated with

multiple factors, including the presence of children in the household due to school closings (Shevlin et al., 2020). Furthermore, depressive symptoms have been found to disproportionately affect young women (Vizard et al., 2020). Previous literature suggests that anxiety and depression can have an adverse effect on sexual desire (Beaber & Werner, 2009), although they can also increase sexual desire in some individuals (Bancroft et al., 2003; Lykins et al., 2006).

The changes in reported sexual behaviors during social lockdown are similar to the findings of other studies (e.g., Jacob et al., 2020; Stephenson et al., 2020), and have significant implications. There was a decreased occurrence of all sexual behaviors, although mixed results about change in frequencies of these sexual behaviors. This could be indicative of people following lockdown rules, particularly given that increases in masturbation were not associated with increases in sexual intercourse, potentially because some people who could not have sex turned to masturbation instead. Participants with unrestricted sociosexuality were more likely to report lower levels of general health and perceived impact on subjective wellbeing. This may come from the restrictions placed on casual sex to reduce transmission rates of COVID-19. Given people with higher levels of sociosexuality can also face prejudice from broader society (Vrangalova & Bukberg, 2015), it is important to consider interventions that target such people, perhaps through sexual health services. Similarly, LGB people with high levels of sexual desire during lockdown reported greater perceived impact on their wellbeing – replicating findings in the US (Sanchez et al., 2020), where one-third of gay and bisexual men reported negative coping behaviors such as binge drinking during lockdown (Stephenson et al., 2020).

Since the initial social lockdown on March 16th, 2020, across the UK, there have been several more variations of social lockdowns, with tier systems introduced throughout the UK. Further social lockdowns have occurred at different times in England, Scotland, Wales and Northern Island, and internationally. All these social restrictions lack advice on how to navigate sex, particularly for single people or couples LAT, thus privileging monogamous relationships. There was a de facto criminalization of sexual activity between consenting adults who did not live in the same household in the UK during lockdown, and legal restrictions on casual sex were effectively in place for much of 2020 in at least some parts of the UK because of the regional “tier” system introduced after the end of the first formal lockdown. Much greater recognition of the impact of lockdown restrictions on sexuality is needed, with consideration given to how social policy can minimize risk in sexual encounters without effectively banning them for extended periods of time: governments need to recognize the importance sex holds in the lives of individuals and society (Rubin, 2011).

In addition to the restrictions on sexual practice, there are other policy implications as they pertain to sexuality. Sexual and reproductive health services have been severely limited during social lockdown, with some closed altogether (Church et al., 2020; Nagendra et al., 2020), making access to treatment

for STIs or fertility treatments more difficult. This may be particularly significant for people who continue to have sexual intercourse with others in contravention of social restrictions, including people who use sex as a coping mechanism against stress (Jaspal et al., 2021; Stephenson et al., 2020). This means that STIs may be currently under-reported and there will be significant public health implications as restrictions are eased. Likewise, public health bodies should plan for a potential significant increase in casual sex as restrictions ease and such behaviors no longer contravene lockdown guidance, given the drop in sexual behaviors found in this and other studies.

Limitations and Conclusion

While the findings provide important insights into sexual practices and behaviors of young adults in the UK during social lockdown due to COVID-19, this study was not without limitations. First, we employed a cross-sectional analysis, recruiting participants during the peak social lockdown restrictions. Second, we relied on retrospective self-report data for levels of sexual desire, which may provide inaccurate or biased results (Schmitt & Di Fabio, 2005). Longitudinal research is needed to explore what happens as social lockdown restrictions ease and whether reported changes persist, how quickly they fade and whether social or health interventions are needed in this endeavor. Relatedly, participants' interpretations of questions may have been different (e.g., "before lockdown" could mean in the last month or year preceding lockdown). Future research should be more specific in questions. Third, the perceived impact on subjective wellbeing measure was developed for this study and not validated prior to the study, due to exceptional time restraints posed by the lifting of lockdown measures. As such, further research with established measures of wellbeing is needed. Relatedly, our measure for general health consisted of a single-item question; a more substantial measure of general health would strengthen reliability. Fourth, the sample was limited to predominantly White, heterosexual young adults. Further research needs to explore the experiences of sexual and ethnic minorities, as well as other age groups. Fifth, there may have been some selection bias: participants were recruited through an online participant recruitment pool, resulting in a convenience sample of people already willing to participate in research. These individuals may perceive more negative impacts of the pandemic, potentially having more free time due to furlough or needing extra income through survey participation. Finally, most of the significant effect sizes were quite small. To address these final limitations, future research should draw on nationally representative samples with larger sample sizes.

In conclusion, this study of UK young adults aged 18–32 found a general decrease in reported rates of sexual behaviors during social lockdown. For those who continued to engage in sexual activity, increases were predicted by gender and sexual orientation. Women reported lower levels of sexual desire compared to men, and also reported a significant decrease in sexual desire during lockdown. Women's perceptions of the impact of lockdown on wellbeing were associated with

attitudes to casual sex. Given these findings and the likelihood of future lockdown measures, in the UK and internationally, it is important to consider the impact of such measures on sexual desires and behaviors and how negative effects from them can be mitigated.

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References

- Aarts, S., Peek, S. T. M., & Wouters, E. J. M. (2015). The relation between social network site usage and loneliness and mental health in community-dwelling older adults. *International Journal of Geriatric Psychiatry, 30*(9), 942–949. <https://doi.org/10.1002/gps.4241>
- Ali, I., & Alharbi, O. (2020). COVID-19: Disease, management, treatment, and social impact. *Science of the Total Environment, 728*, 1–6. <https://doi.org/10.1016/j.scitotenv.2020.138861>
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469–480. <https://doi.org/10.1037/0003-066X.55.5.469>
- Balzarini, R., Muise, A., Zoppolat, G., Bartolomeo, A., Rodrigues, D., Alonso-Ferres, M., Urganci, B., Debrot, A., Pichayayothin, N., Dharma, C., Chi, P., Karremans, J., Schoebi, D., & Slatcher, R. (2020). *Love in the time of COVID: Perceived partner responsiveness buffers people from lower relationship quality associated with COVID-related stressors*. PsyArXiv. <https://doi.org/10.31234/osf.io/e3fh4>
- Bancroft, J., Janssen, E., Strong, D., Carnes, L., Vukadinovic, Z., & Long, J. S. (2003). The relation between mood and sexuality in heterosexual men. *Archives of Sexual Behavior, 32*(3), 217–230. <https://doi.org/10.1023/A:1023409516739>
- Beaber, T. E., & Werner, P. D. (2009). The relationship between anxiety and sexual functioning in lesbians and heterosexual women. *Journal of Homosexuality, 56*(5), 639–654. <https://doi.org/10.1080/00918360903005303>
- Church, K., Gassner, J., & Elliott, M. (2020). Reproductive health under COVID-19 – Challenges of responding in a global crisis. *Sexual and Reproductive Health Matters, 28*(1), 522–525. <https://doi.org/10.1080/26410397.2020.1773163>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.
- Cohen, S., Janicki-Deverts, D., & Doyle, W. J. (2015). Self-rated health in healthy adults and susceptibility to the common cold. *Psychosomatic Medicine, 77*(9), 959–968. <https://doi.org/10.1097/PSY.000000000000232>
- Collins, C., Landivar, L. C., Ruppanner, L., & Scarborough, W. J. (2021). COVID-19 and the gender gap in work hours. *Gender, Work, and Organization, 28*(S1), 101–112. <https://doi.org/10.1111/gwao.12506>
- Craig, L., & Churchill, B. (2020). Dual-earner parent couples' work and care during COVID-19. *Gender, Work, and Organization*, Online first, 28(S1), 66–79. <https://doi.org/10.1111/gwao.12497>
- Duncan, S., Phillips, M., Roseneil, S., Carter, J., & Stoilova, M. (2013). *Living apart together: Uncoupling intimacy and co-residence* [Research Briefing]. NatCen Social Research. <https://natcen.ac.uk/media/28546/living-apart-together.pdf>
- French, J. E., Altgelt, E. E., & Meltzer, A. L. (2019). The implications of sociosexuality for marital satisfaction and dissolution. *Psychological Science, 30*(10), 1460–1472. <https://doi.org/10.1177/0956797619868997>
- Gausman, J., & Langer, A. (2020). Sex and gender disparities in the COVID-19 pandemic. *Journal of Women's Health, 29*(4), 465–466. <https://doi.org/10.1089/jwh.2020.8472>
- Hawkey, L. C., Bureson, M. H., Berntson, G. G., & Cacioppo, J. T. (2003). Loneliness in everyday life: Cardiovascular activity,

- psychosocial context, and health behaviors. *Journal of Personality and Social Psychology*, 85(1), 105–120. <https://doi.org/10.1037/0022-3514.85.1.105>
- Jacob, L., Smith, L., Butler, L., Barnett, Y., Grabovac, I., McDermott, D., Armstrong, N., Yakkundi, A., & Tully, M. (2020). Challenges in the practice of sexual medicine in the time of COVID-19 in the United Kingdom. *Journal of Sexual Medicine*, 17(7), 1229–1236. <https://doi.org/10.1016/j.jsxm.2020.05.001>
- Jaspal, R., & Breakwell, G. M. (2020). Socio-economic inequalities in social network, loneliness and mental health during the COVID-19 pandemic. *International Journal of Social Psychiatry*, 002076402097669. Advance online publication. <https://doi.org/10.1177/0020764020976694>
- Jaspal, R., Lopes, B., Wignall, L., & Bloxson, C. (2021). Predicting sexual risk behavior in British and European union university students in the United Kingdom. *American Journal of Sexuality Education*, 16(1), 140–159. Advance online publication. <https://doi.org/10.1080/15546128.2020.1869129>
- Jordan, R. E., Adab, P., & Cheng, K. K. (2020). Covid-19: Risk factors for severe disease and death. *BMJ*, 368, m1198. <https://doi.org/10.1136/bmj.m1198>
- Jowett, A. (2020). The psychological impact of social distancing on gender, sexuality and relationship diverse populations. *Psychology of Sexualities Section Review*, 11(1), 6–8.
- Lehmiller, J., Garcia, J., Gesselman, A., & Mark, K. (2020). Less sex, but more sexual diversity: Changes in sexual behavior during the COVID-19 coronavirus pandemic. *Leisure Sciences*, Online first, 1–10. <https://doi.org/10.1080/01490400.2020.1774016>
- Levin, I. (2004). Living apart together: A new family form. *Current Sociology*, 52(2), 223–240. <https://doi.org/10.1177/0011392104041809>
- Li, L. Z., & Wang, S. (2020). Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom. *Psychiatry Research*, 291, 113267. <https://doi.org/10.1016/j.psychres.2020.113267>
- Li, W., Li, G., Xin, C., Wang, Y., & Yang, S. (2020). Challenges in the practice of sexual medicine in the time of COVID-19 in China. *Journal of Sexual Medicine*, 17(7), 1225–1228. <https://doi.org/10.1016/j.jsxm.2020.04.380>
- Lykins, A. D., Janssen, E., & Graham, C. A. (2006). The relationship between negative mood and sexuality in heterosexual college women and men. *Journal of Sex Research*, 43(2), 136–143. <https://doi.org/10.1080/00224490609552308>
- Matthews, T., Danese, A., Gregory, A. M., Caspi, A., Moffitt, T. E., & Arseneault, L. (2017). Sleeping with one eye open: Loneliness and sleep quality in young adults. *Psychological Medicine*, 47(12), 2177–2186. <https://doi.org/10.1017/S0033291717000629>
- Nagendra, G., Carnevale, C., Neu, N., Cohall, A., & Zucker, J. (2020). The potential impact and availability of sexual health services during the COVID-19 pandemic. *Sexually Transmitted Diseases*, 47(7), 434–436. <https://doi.org/10.1097/OLQ.0000000000001198>
- Nolsoe, E. (2020, June 12th). Sex and dating under COVID-19. *YouGov*. <https://yougov.co.uk/topics/relationships/articles-reports/2020/06/12/sex-and-dating-under-covid-19>
- ONS. (2020, February 10th). *Living longer: Changes in housing tenure over time*. Office for National Statistics.
- ONS. (2021, February 23rd). *Earnings and employment from pay as you earn real time information, UK: February 2021*. Office for National Statistics.
- Overall, N., Chang, V., Pietromonaco, P., Low, R., & Henderson, A. (2020). *Relationship functioning during COVID-19 quarantine*. PsyArXiv. <https://doi.org/10.31234/osf.io/7cvdn>
- Park, C., Russell, B., Fendrick, M., Finelstein-Fox, L., Hutchinson, M., & Becker, J. (2020). Americans' COVID-19 stress, coping, and adherence to CDC guidelines. *Journal of General Internal Medicine*, 5(8), 2296–2303. <https://doi.org/10.1007/s11606-020-05898-9>
- Penke, L., & Asendorpf, J. B. (2008). Beyond global sociosexual orientations: A more differentiated look at sociosexuality and its effects on courtship and romantic relationships. *Journal of Personality and Social Psychology*, 95(5), 1113–1135. <https://doi.org/10.1037/0022-3514.95.5.1113>
- Pietromonaco, P., & Collins, N. L. (2017). Interpersonal mechanisms linking close relationships to health. *American Psychologist*, 72(6), 531–5424. <https://doi.org/10.1037/amp0000129>
- Pietromonaco, P. R., & Beck, L. A. (2019). Adult attachment and physical health. *Current Opinion in Psychology*, 25, 115–120. <https://doi.org/10.1016/j.copsyc.2018.04.004>
- Public Health England. (2020). *Coronavirus (COVID 19)*. Gov.uk. Retrieved August 13th, 2020, from <https://publichealthmatters.blog.gov.uk/category/coronavirus-covid-19/>
- Raque-Bogdan, T. L., Ericson, S. K., Jackson, J., Martin, H. M., & Bryan, N. A. (2011). Attachment and mental and physical health: Self-compassion and mattering as mediators. *Journal of Counseling Psychology*, 58(2), 272–278. <https://doi.org/10.1037/a0023041>
- Rodrigues, D., Lopes, D., & Smith, C. V. (2017). Caught in a “Bad Romance”? Reconsidering the negative association between sociosexuality and relationship functioning. *Journal of Sex Research*, 54(9), 1118–1127. <https://doi.org/10.1080/00224499.2016.1252308>
- Rovai, A. P., Baker, J. D., & Ponton, M. K. (2014). *Social science research design and statistics: A practitioner's guide to research methods and IBM SPSS analysis* (2nd ed.). Watertree Press.
- Rubin, G. (2011). *Deviations: A Gayle Rubin reader*. Duke University Press.
- Sanchez, T. H., Zlotorzynska, M., Rai, M., & Baral, S. D. (2020). Characterizing the impact of COVID-19 on men who have sex with men across the United States in April, 2020. *AIDS and Behavior*, 24(7), 2024–2032. <https://doi.org/10.1007/s10461-020-02894-2>
- Schmitt, J., & Di Fabio, R. P. (2005). The validity of prospective and retrospective global change criterion measures. *Archives of Physical Medicine and Rehabilitation*, 86(12), 2270–2276. <https://doi.org/10.1016/j.apmr.2005.07.290>
- Shanahan, L., Steinhoff, A., Bechtiger, L., Murray, A., Nivette, A., Hepp, U., Ribeaud, D., & Eisner, M. (2020). Emotional distress in young adults during the COVID-19 pandemic: Evidence of risk and resilience from a longitudinal cohort study. *Psychological Medicine*, 1–10. <https://doi.org/10.1017/S003329172000241X>
- Shevlin, M., McBride, O., Murphy, J., Miller-Gibson, J., Hartman, T., Levita, L., & Bentall, R. (2020). *Anxiety, depression, traumatic stress, and COVID-19 related anxiety in the UK general population during the COVID-19 pandemic*. PsyArXiv. <https://doi.org/10.31234/osf.io/hb6nq>
- Shilo, G., & Mor, Z. (2020). COVID-19 and the changes in the sexual behavior of men who have sex with men: Results of an online survey. *Journal of Sexual Medicine*, 17(10), 1827–1834. <https://doi.org/10.1016/j.jsxm.2020.07.085>
- Simpson, J. A., & Gangestad, S. W. (1991). Individual differences in sociosexuality: Evidence for convergent and discriminant validity. *Journal of Personality and Social Psychology*, 60(6), 870–883. <https://doi.org/10.1037/0022-3514.60.6.870>
- Smith, G. D., & Spiegelhalter, D. (2020). Shielding from COVID-19 should be stratified by risk. *BMJ*, 369(8248), m2063. <https://doi.org/10.1136/bmj.m2063>
- Society for the Study of Emerging Adulthood. (2014). *About SSEA*. SSEA. <https://ssea.org/about/index.htm>
- Spector, I. P., Carey, M. P., & Steinberg, L. (1996). The Sexual Desire Inventory: Development, factor structure, and evidence of reliability. *Journal of Sex & Marital Therapy*, 22(3), 175–190. <https://doi.org/10.1080/00926239608414655>
- Stephenson, R., Chavanduka, T. M., Rosso, M. T., Sullivan, S. P., Pitter, R. A., Hunter, A. S., & Rogers, E. (2020). Sex in the time of COVID-19: Results of an online survey of gay, bisexual and other men who have sex with men's experience of sex and HIV prevention during the US COVID-19 epidemic. *AIDS and Behavior*, 25(1), 40–48. <https://doi.org/10.1007/s10461-020-03024-8>
- Takahashi, T., Ellingson, M., Wong, P., Israelow, B., Lucas, C., Klein, J., Silva, J., Mao, T., Oh, J., Tokuyama, M., Lu, P., Venkataraman, A., Park, A., Liu, F., Meir, A., Sun, J., Wang, E., Casanovas-Massana, A., ... Iwasaki, A. (2020). Sex differences in immune response that underlie COVID-19 disease outcomes. *Nature*, 588, 1–6. <https://doi.org/10.1038/s41586-020-2700-3>
- UK Government. (2020). *Number of coronavirus (COVID-19) cases and risk in the UK*. Department of Health and Social Care. <https://www.gov.uk/guidance/coronavirus-covid-19-information-for-the-public>

- Usher, K., Bhullar, N., Durkin, J., Gyamfi, N., & Jackson, D. (2020). Family violence and COVID-19: Increased vulnerability and reduced options for support. *International Journal of Mental Health Nursing*, 29(4), 549–552. <https://doi.org/10.1111/inm.12735>
- Vizard, T., Davis, J., White, E., & Beynon, B. (2020). *Coronavirus and depression in adults, Great Britain: June 2020*. Office for National Statistics. <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/coronavirusanddepressioninadultsgreatbritain/june2020>
- Vrangalova, Z., & Bukberg, R. E. (2015). Are sexually permissive individuals more victimized and socially isolated? *Personal Relationships*, 22(2), 230–242. <https://doi.org/10.1111/per.12076>
- Vrangalova, Z., & Ong, A. D. (2014). Who benefits from casual sex? The moderating role of sociosexuality. *Social Psychological and Personality Science*, 5(8), 883–891. <https://doi.org/10.1177/1948550614537308>
- Ware, J., Snow, K., Kosinski, M., & Gandek, B. (1993). *SF-36 health survey manual and interpretation guide*. The Health Institute, North England Medical Centre.
- World Health Organization. (2020). *Statement on the second meeting of the International Health Regulations (2005) emergency committee regarding the outbreak of novel coronavirus (2019-nCoV)*. World Health Organisation. [https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov))