BEHAVIOR

# Sexual Motivations Underlying Compulsive Sexual Behavior in Women and Men From Germany and Hungary

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## ABSTRACT

**Background:** There are ongoing debates about conflicting models on how to conceptualize compulsive sexual behavior. At the heart of these discussions is the question about the sexual motivations underlying compulsive sexual behavior, as different models assume different motivations.

**Aim:** The aim of the present study was to understand sexual motivations underlying compulsive sexual behavior and their relation to the most prominent conceptualizations of compulsive sexual behavior (eg, compulsive sexual behavior disorder [CSBD], sex addiction).

**Methods:** We used self-reported data from 2 large samples of Hungarian and German populations (N = 9814). The Sexual Motivation Scale (SexMS), a 24-item self-report measure based on self-determination theory, was used to assess a diverse set of sexual motivations. Compulsive sexual behavior was assessed with the 19-item Compulsive Sexual Behavior Disorder Scale (CSBD-19), that is based on the ICD-11 diagnostic guidelines of CSBD. We used structural equation modeling to examine the hypothesized associations between sexual motivations and compulsive sexual behavior and examined potential gender differences in these associations.

**Outcomes:** Compulsive sexual behavior was assessed in relation to a set of sexual motivations.

**Results:** Amotivation had the strongest positive association with compulsive sexual behavior, but integrated, introjected, and intrinsic motivations were also positively related to it. Importantly, these associations did not differ for women and men, and between the 2 samples.

**Clinical Implications:** Future research and treatment should also consider sexual motivations that are not listed among the ICD-11 guidelines for CSBD, including high levels of sexual interest, continuing the behavior despite having little satisfaction from it and coping with sex.

**Strengths & Limitations:** Although we used large samples of general populations in 2 Western countries, this motivational background of compulsive sexual behavior awaits replication in a clinical sample of individuals experiencing CSBD.

**Conclusion:** The identified sexual motivations underlying compulsive sexual behavior are relevant for assessing and treating patients as motivations may be integrated into psychotherapeutic interventions. **Koós M, Fuss J, Klein V, et al. Sexual Motivations Underlying Compulsive Sexual Behavior in Women and Men From Germany and Hungary. J Sex Med 2022;19:170−181.**

# INTRODUCTION

Although Compulsive Sexual Behavior Disorder (CSBD) has been introduced into the *International Classification of Diseases, 11th Revision* (ICD-11),[1] the debate about how to conceptualize compulsive sexual behavior continues.[2] In the ICD-11, CSBD is conceptualized as an impulse control disorder with an inability to control repetitive sexual impulses or urges, resulting in repetitive sexual behaviors, which causes clinically significant problems in social and emotional functioning and marked distress. Nonetheless, there are various other conceptualizations that are currently discussed. The most prominent ones include a non-pathological model of high sexual drive, a model which situates compulsive sexual behavior on the extreme end of 'normal' sexual behavior while consider it a sexual health problem.[3] Further pathological models include sexual addiction, impulsive/compulsive behavior, hypersexuality, and a model which attempts to integrate previous conceptualizations of compulsive sexual behaviors.[4,5] At the heart of these discussions is the question about sexual motivations underlying compulsive sexual behavior (ie, why one engages in sexual activities) as different models assume different motivations.

## Sexual Motivations

Self-determination theory (SDT)[6] provides a useful framework for understanding sexual motivations. The theory conceptualizes motivations based on how the source of them lies on social-contextual factors. Instead of using the magnitude of motivation to categorize them, it puts the emphases on how the specific activity contributes to the basic psychological needs of autonomy, competence and relatedness, and focuses on the quality of the motivations.[7] This means that besides these motivations represent a continuum according to the extent of autonomy they imply, they also vary in the source that initiate them, as well as the subjective, emotional, and social experiences, and contexts and behavioral consequences that accompany them.[6] In line with previous studies on work, sport, and academic achievement-related motivations, sexual motivations can also be interpreted in this theoretical framework.[8−13]

Sexual motivations can vary on the autonomy-control continuum, from the most self-determined and autonomous behavior on the one end (ie, intrinsic motivation) to the most heteronomous behavior that is characterized by the complete absence of intrinsic motivation on the other end (ie, amotivation).[14] Previous research has divided this spectrum into 6 separate types of sexual motivations (ie, qualitatively and quantitatively different motivations), with intrinsic motivation being the most self-determined motivation.[14]

*Intrinsic motivation* is characterized by people's engagement in behaviors for the own sake of the given activity, because it is pleasurable in itself, and is in line with the individual's self, values, and identity. Regarding sexual behavior, it means that individuals engaging in sexual behaviors as they feel it is a pleasurable activity for them and they genuinely enjoy it. Intrinsic motivation is

related to optimal functioning, which decreases toward the other end of the spectrum.

Four extrinsic motivations (ie, integrated, identified, introjected, and external motivation) fall in between intrinsic motivation and amotivation.[15] Extrinsically motivated behaviors are not intrinsically pleasure-driven, but they play an (extrinsic) role for the individual. *Integrated motivation* touches a meaningful and integral part of an individual's identity and is still coherent with the self. In case of sexuality, it means that individuals engage in sexual behaviors because they feel that their identity requires it. For example, they see themselves as sexual beings, who would act in a certain way in the given situation (ie, initiate the sexual activity). *Identified motivations* are still perceived as being personally significant but not related to one's identity. In the case of sexuality, it may appear as individuals engage in sexual activities because they consider it as part of life (eg, sexuality is a normal and important aspect of being a human).[14] In contrast, *We identified the potential motivations* are driven by internal pressures, such as negative emotions. These motivations are thus decreasingly perceived as autonomous. However, the purpose of all these extrinsic motivations is to validate some aspects of the self (eg, to prove that individuals are good lovers or to boost their self-esteem). In sum, external motivations are about receiving reward or avoiding punishments from an external entity, such as engaging in sexual activities to gain social benefit from it or to avoid conflicts with a partner.

Finally, *amotivation* is highly distinct from the other motivational orientations, which were all based on some degree of intentionality. In the case of amotivation, the absence of motivation and intention could derive from the lack of competence (when one feels they are not able to control the outcome), lack of interest, or the motivation to resist the influence, masked as amotivation regarding the given activity. In case of sexual behaviors, for example, it would mean that someone feels they are not interested in the sexual activity in the way others do, or that they do not know why they engage in sexual activities.

Notably, important gender differences were found in sexual motivations. Gravel and colleagues[14] reported significant, moderate difference in external motivation and small differences in integrated, introjected and amotivation, with men scoring higher on these motivations than women. However, there is only a small body of studies addressing potential gender differences in the case of SDT-based sexual motivations, thus examining whether sexual motivations' associations with CSB may differ based on gender may fill a gap in the literature.

In sum, based on the self-determination theory, the extent of how intrinsic the motivation behind the activities is in association with well-being. Regarding the theory of optimal functioning, the more self-determined the behavior is, the association tends to be more positive with well-being indicators and more negative with ill-being indicators.[7,14,16,17] Thus, compulsive sexual behavior may be considered as a potential negative outcome of sexual motivations.

## Different Conceptualizations of Compulsive Sexual Behavior and Their Associations With Sexual Motivations

Similarly to sexual motivations, while compulsive sexual behavior may be present in anyone, some gender differences should be mentioned. Gender differences in prevalence data regarding feelings of distress caused by the difficulties controlling sexual urges and impulses was found in a U.S. national probability survey.[18] In a recent Hungarian study, almost twice as many men score above the CSBD cut-off score as women (5.2% and 3.3%, respectively).[19] Previous studies examining nationally-representative population samples showed that, in general, men score higher on CSB scales and report more frequent sexual behaviors than women.[20,21] Regarding clinical populations, a study found significantly higher lifetime prevalence and current CSBD in men than in women.[5] Conversely, a study conducted on a treatment-seeking, clinical sample[22] reported women scoring higher on a scale assessing hypersexual symptoms, and reporting more frequent sexual behavior, as well as concerns and negative effects of these behaviors. However, it is important to note that most previous studies mainly focused on male samples, providing little knowledge on women's CSB and potential gender differences.[23,24]

The importance of the motivational background in compulsive behaviors (eg, internet gaming disorder, alcohol use, problematic pornography use) is well-established,[25,26] and different conceptualizations of compulsive sexual behavior can be understood through the lens of sexual motivations. Even though various motivational factors are usually simultaneously present, even the highly overlapping conceptualizations of compulsive sexual behavior have differently emphasized the role of certain underlying motivations (Table 1). In the following, several existing models describing compulsive sexual behavior will be presented in association with a focus on the motivational components. These associations will be presented as they appear in the original description of the theoretical models.

The *non-pathological model of high sexual drive*[27] emphasizes that high levels of sexual interest and behavior might not be considered as a mental disorder, instead, dysregulated sexuality might be just a marker of high sexual desire, resulting in frequently occurring sexual thoughts, fantasies, and behaviors. This model would expect high levels of intrinsic sexual motivation (such as high levels of sexual desire) being related to compulsive sexual behavior. In other words, high levels of sexual desire are not per se problematic; rather, a person's distress is caused by the difficulties of managing the high degree of desire, and by the moral notions and judgments about frequent sexuality in society.[28]

Similar to the high sexual drive conceptualization, Vigorito and Braun-Harvey[3] approaches the issue from a spectrum-mindset, where one extent (out of control sexual behavior) is a problem on the extreme end of the "normal" range of sexual behavior, and not a qualitatively different concept. Viewing out-of-control sexual behavior as a *sexual health problem*, and not a distinct disorder, might root in the sociocultural differences on what should be considered normal or abnormal in certain cultures. They emphasize that the disordered levels of this problem (if exist) are extremely rare. Intrinsic motivation appears in their interpretation when sexual urges (eg, physiological experiences motivating sexual behaviors, a force pushing the self), thoughts, and behaviors are described, since these are subjective internal experiences (ie, urges and fantasies), often resulting in outward expressions (ie, behaviors). Amotivation is also presented in the model, when the subjective feeling of lack of agency (ie, feeling out of control) is mentioned.

In contrast, the pathological models of compulsive sexual behavior, namely hypersexual disorder,[29] compulsive sexual behavior disorder,[1] and sexual addiction models,[4] assume motivations that are mainly located toward the heteronomous end of the spectrum (for a review of these models see[30]). Only the *hypersexuality model* (which was developed based on the sexual desire dysregulation, impulsivity, compulsivity, and addiction frameworks) considers a highly intrinsically motivated sexual desire at the core of symptoms (*"Hypersexual Disorder is a sexual desire disorders characterized by an increased*

**Table 1.** Sexual motivations underlying different concepts of compulsive sexual behavior

| | Intrinsic motivation | Integrated motivation | Identified motivation | Introjected motivation | External motivation | Amotivation |
|---|---|---|---|---|---|---|
| High sexual desire (nonpathological) | ✓ | - | - | - | - | - |
| Out of control sexual behavior as a sexual health problem | ✓ | - | - | - | - | ✓ |
| Hypersexual disorder | ✓ | - | - | ✓ | (!) | ✓ |
| Sex addiction | (✓) | - | - | ✓ | - | ✓ |
| Integrated model | ✓ | (✓) | - | ✓ | - | ✓ |
| Impulsive/compulsive sexual behavior | - | - | - | - | - | ✓ |
| Compulsive sexual behavior disorder | - | - | (✓) | - | ! | ✓ |

Note. ✓= the model is characterized by a positive relation to this motivation; ! = the model is characterized by a negative relation to this motivation; (...) = the motivation is only partly present in the model.

*frequency and intensity of sexually motivated fantasies, arousal, urges, and enacted behavior"*), while the others do not emphasize intrinsic motivations. Additionally, introjected motivations are also listed among the rejected DSM-5 diagnostic criteria of hypersexual disorder (ie, repetitively engaging in sexual fantasies, urges, and behavior in response to dysphoric mood states [eg, anxiety, depression, boredom, and irritability] as well as in response to stressful life events).[29]

Opposed to the hypersexuality model, the *sexual addiction model* mainly stresses introjected motivations[30] (ie, understanding compulsive sexual behavior as a means to regulate negative emotions and stress) and amotivation (ie, the feeling of out-of-control behavior and the continuation of given behavior despite the substantial harmful consequences). However, it also partly includes intrinsic motivations (ie, besides pain/negative emotion reduction, pleasure seeking may appear as well).[31] Therefore, this model includes both pleasure-seeking, impulsive (motivated by positive reinforcement) and negative affect reducing, compulsive behaviors (motivated by negative reinforcement).[30]

Coleman's[32] *Impulsive/Compulsive Sexual Behavior* model is open to the possibility of multiple pathological pathways. It takes into account that some individual might have more problems with impulse control, while other might have more compulsivity-related problems. Amotivation is mentioned through the obsessive-compulsive mechanisms, when the behavior is driven by obsessive and intrusive thoughts (and not by pleasure seeking), and the act is followed by temporary relief. However, the individual does not report pleasure out of the behavior. Based on this model, amotivation might be the most decisive motivation of compulsive sexual behavior.

The *Integrated Model of Compulsive Sexual Behavior* by Birken[33] describes compulsive sexual behavior by using neurobiological and physiological concepts of sexual excitation (integrating the Dual Control Model[34] and the Sexual Tipping Point Model[35])[1] and implementing it to the Incentive Salience Theory framework.[36] The model includes intrinsic motivation (and even distinguishes between wanting—conditioned stimulus, and liking—unconditioned stimulus), introjected motivation (explicitly states using sex as a coping strategy in response to negative mood or stress), and amotivation (mentions habituation, which leads to an increase in sexual behavior but a decrease in satisfaction). Integrated motivation is partly described in habituation, since a habitual act could mean that the individual behaves this way because he or she feels it is part of their identity.

The *ICD-11 conceptualization of CSBD* primarily understands compulsive sexual behavior as an impulse control disorder. Central to the diagnosis is a lack of control over sexual urges that is not driven by sexual motivation but rather an absence of motivation, which reflects amotivation (ie, *"continued repetitive sexual behavior despite (...) deriving little or no satisfaction from it"*). Moreover, it emphasizes that people exhibiting compulsive sexual behavior are less inhibited by the perceived external consequences of their sexual behavior, suggesting a negative correlation with external motivations (ie, a continuation of sexual behavior despite negative consequences).

Although said models differ with regard to the underlying concept and how incorporated different sexual motivations in their conceptualizations (Table 1), they were all developed to better understand a population of patients seeking help because they have problems regulating their sexual behavior, resulting in distress for them and/or their families. Even though the motivations underlying such behaviors may be highly individual, it is useful for nosological purposes, and to develop therapeutic interventions to understand which motivational mechanisms drive compulsive sexual behavior.

Despite sexual motivations appear to play important roles in all described conceptualizations of compulsive sexual behavior (Table 1), no previous studies have examined the associations between a diverse set of sexual motivations and compulsive sexual behavior. Therefore, we examined the associations between sexual motivations and compulsive sexual behavior in the present study. The aims of the present study were 2-fold. First, we explored sexual motivations underlying compulsive sexual behavior. Second, we examined if the associations between sexual motivations and CSB differ for women and men. Given that women were often completely neglected in research,[37] most knowledge of compulsive sexual behavior in women is based on clinical conjectures, and inappropriate generalizations being made from research results based on male samples.[38,39] Recent research, however, shows that compulsive sexual behavior is much more common among women than previous research suggested.[40,41] We, therefore, examined potential gender differences in sexual motivations underlying compulsive sexual behavior in an exploratory manner.

## METHOD

### Procedure

Data were collected via online questionnaires, advertised on a large news portal (Hungarian sample) and Internet forums of health care sites and social networks (German sample). It took approximately 30 minutes to complete the questionnaires as the present study was part of a larger project.[41] Individuals aged 18 years or older were invited to participate. In the case of the Hungarian sample, participants were recruited via an online advertisement on a large Hungarian news portal in the summer of 2019. Among those who provided their contact information, gift vouchers for an electronics store were drawn as an incentive. In the case of the German sample, participants were recruited via online health-care forums and social networking sites (eg, Facebook) at the end of the summer of 2019. We aimed to recruit at

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[1]The Dual Control Model (29) describes human sexuality on the continuum of sexual excitation and inhibition, where the two neurological systems relatively independently produce sexual behavior. The possible imbalance between the two systems could be one explanation of compulsive sexual behaviors. The Sexual Tipping Point Model describes sexual behaviors as a result of inhibitory versus arousing biopsychosocial variables.

least 300 participants in both countries to ensure that the statistical analyses would not be underpowered, but we did not set an upper limit for participation. All procedures were approved by the Research Ethics Committee of the Eötvös Loránd University (2016/286-3) and the Institutional review board of the Centre of Psychosocial Medicine/ University Medical Center Hamburg Eppendorf (LPEK-0060).

## Participants

**Hungarian sample.** Of 12,026 respondents who agreed to participate, 55 were excluded for inconsistent or unengaged response patterns (eg, a given participant's age at first sexual experience was higher than their age; selecting the same response option for all items in a given scale which includes reverse scored items), and 2,591 were excluded for not completing any of the scales used in the present study (ie, only those participants were included in the present study who completed either the Sexual Motivations Scale or the Compulsive Sexual Behavior Disorder Scale, or both scales). Thus, 9,380 individuals (3,178 women, 33.9%) aged between 18 and 76 years ($M_{age}$ = 36.11 years, $SD_{age}$ = 12.22) were included in the present study. Concerning the place of residence,[2] 4,773 reported living in the capital city (50.9%), 3,626 in a town (38.6%), and 981 in a village (10.5%). Concerning the highest level of education, 180 reported having an elementary school diploma or lower level of education (1.9%), 433 obtained a vocational school degree (4.6%), 2,918 a high school degree (62.4%), and 5,849 a university degree (62.4%). Concerning relationship status, 2,460 reported being single (26.2%), 6,833 in any romantic relationship (ie, being in a relationship, engaged, or married) (72.9%), and 87 selected the "other" option (0.9%).

**German sample.** Of 541 respondents who agreed to participate, 107 were excluded for not completing any of the scales used in the present study (ie, only those participants were included in the present study who completed either the Sexual Motivations Scale or the Compulsive Sexual Behavior Disorder Scale, or both scales), and no participant was excluded for inconsistent or unengaged response patterns (eg, a given participant's age at first sexual experience was higher than their age; selecting the same response option for all items in a given scale which includes reverse scored items). Thus, 434 individuals (259 women, 60.1%) aged between 18 and 70 years ($M_{age}$ = 27.57 years, $SD_{age}$ = 7.73) were included in the present study. Concerning the place of residence, 47 reported living in the capital city (10.8%), 317 in a town (73.0%), and 70 in a village (16.1%). Concerning highest level of education, one reported having an elementary school diploma or lower level of education (0.2%), 10 obtained a vocational school degree

(2.3%), 186 a high school degree (42.9%), and 237 a university degree (54.6%). Concerning relationship status, 115 reported being single (26.5%), 307 in any romantic relationship (ie, being in a relationship, engaged, or married) (70.7%), and 12 selected the "other" option (2.8%).

## Measures

**Sexual Motivations Scale (SexMS).**[14,42] The SexMS is a 24-item, 6-factor scale assessing sexual motivations based on the self-determination theory. The intrinsic motivation factor includes items related to engagement in sex because of the inherent pleasure it provides (4 items, eg, "Because I enjoy sex."). The *integrated* motivation factor includes items related to engagement in sex because sex is an integral part of one's identity (4 items, eg, "Because sexuality is a meaningful part of my life."). The *identified* motivation factor includes items related to engagement in sex because sex is a normal and healthy part of life (eg, "Because sexuality is a normal and important aspect of human development."). The *introjected* motivation factor includes items related to engagement in sex because sex may enhance individuals' self-worth by proving that they are good in sex (4 items, eg, "To prove to myself that I am a good lover."). The *external* motivation factor includes items related to engagement in sex to receive rewards or avoid conflict (4 items, eg, "Because I don't want to be criticized by my partner."). The *amotivation* factor includes items related to an absence of motivation to engage in sex due to either a lack of control or efficacy over the behavior (4 items, eg, "I don't know; I feel it's not worth it."). Participants indicated to what extent each of the statements correspond to their motivates for having sex in general, using a 7-point scale (1 = "does not correspond at all," 7 = "corresponds completely"). Higher scores on each factor indicate higher levels of the given motivation. Although there is a continuity of these motivations (ie, based on SDT theory, sexual motivations lay on a continuum based on the extent of autonomy they represent), and are highly correlated with each other, the motivations are treated as separate factors, since they are qualitatively and quantitatively different from each other.

**Compulsive Sexual Behavior Disorder Scale (CSBD-19).**[41] The CSBD-19 is a 19-item, 5-factor scale assessing compulsive sexual behavior. The development of the instrument followed the ICD-11 diagnostic guidelines for CSBD, considering the past 6 months. The scale was cross-culturally validated in 3 different languages, and a threshold was determined to identify at-risk individuals. The *control* factor includes items related to failure to control compulsive sexual behavior (3 items, eg, "Even though my sexual behavior was irresponsible or reckless, I found it difficult to stop."). The *salience* factor includes items related to compulsive sexual behavior being the central focus of one's life (3 items, eg, "When I could have sex, everything else became irrelevant."). The *relapse* factor includes items related to unsuccessful efforts to reduce compulsive sexual behavior (3 items, "I was not successful in reducing the amount of sex I had."). The

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[2]Capital city means the state capital in each country (ie, Budapest and Berlin, respectively). The terms town and villages represent judicial information about residency, which is publicly known for all residence. These are not based on entirely of population number.

*dissatisfaction* factor includes items related to experiencing less or no satisfaction from sexual behaviors (3 items, eg, "I had sex even when I did not enjoy it anymore."). The *negative consequences* factor includes general and domain-specific items related to clinically significant distress or impairment as a result of compulsive sexual behavior (7 items, eg, "I did not accomplish important tasks because of my sexual behavior."). Before completing the scale, participants were provided with the following definition: *"For the purpose of this questionnaire, sex is defined as any activity or behavior that stimulates or arouses a person with the intent to produce an orgasm or sexual pleasure (eg, self-masturbation or solosex, using pornography, intercourse with a partner, oral sex, anal sex, etc.). Sexual behaviors may or may not involve a partner."* Participants indicated their levels of agreement with each item using a 4-point scale (1 = "totally disagree," 4 = "totally agree"). Higher scores indicate higher levels of compulsive sexual behavior, and the score 50 points or above indicate individuals at high risk of compulsive sexual behavior.

## Statistical Analysis

Descriptive statistics were computed in SPSS 25 (IBM Corp, Armonk, NY). All other analyses were conducted in Mplus 7.3 (Muthén & Muthén, Los Angeles, CA). We used the weighted least squares mean- and variance-adjusted estimator (WLSMV), which has been found to be superior to maximum-likelihood estimation for ordered items, particularly when the response options follow asymmetric thresholds (for a review, see[43]). Following previous work,[44] the main statistical analyses were conducted in 3 steps.

First, measurement models were separately tested in the 4 subgroups of interest (Hungarian men, Hungarian women, German men, German women). Following prior work,[14] sex motivations were modeled with the standard confirmatory factor analytic (CFA) framework that included the 6 correlated motivational factors and in which scale items loaded on their a priori factors. In contrast, compulsive sexual behavior was modeled using bifactor confirmatory factor analysis.[45] Bifactor models provide a way to directly disaggregate the total item covariance into a global component (G-factor) underlying responses to all items and specific components (S-factor) that are specific to a subset of items and not explained by the global component, thus providing a clear global estimate of respondents' compulsive sexual behavior. This analytic decision was based on recent statistical evidence documenting the advantages of relying on the more flexible bifactor, instead of higher-order, representations.[46,47] Consequently, items were allowed to load on the G-factor and their a priori S-factor simultaneously. Following typical bifactor specifications,[45,47] all factors were specified as orthogonal (ie, not allowed to correlate with one another).

Second, to ascertain comparable measurement properties, and thus minimize measurement biases across countries and gender, tests of measurement invariance were conducted on sexual motivations and compulsive sexual behavior. These tests were conducted in the following sequence,[48,49]; (1) configural (equal factor structure); (2) weak (equal loadings); (3) strong (equal thresholds); (4) strict (equal uniquenesses); (5) latent variance-covariance (equal variance-covariance matrix); and (6) latent means (equal latent means). While it is possible, with weak invariance to combine the samples for predictive tests,[50] there are statistical advantages associated with additional tests of invariance (ie, the resulting model is more parsimonious, leading to more stable and trustworthy estimates).

Third, the most invariant measurement models were then incorporated into a path model in which sex motivations predicted the global levels of compulsive sexual behavior.[2] This path model was estimated in a multi-group framework to assess the extent to which the relations would generalize across the groups, in the following sequence: (1) predictions freely estimated; (2) regression slopes constrained to equality; (3) regression intercepts constrained to equality across groups; and (4) regression residuals constrained to equality.[51]

As for model evaluation, commonly used goodness-of-fit indices were used[52]: values higher than .90 and .95 for the CFI and TLI were considered to reflect adequate and excellent fit, respectively; and values smaller than .08 or .06 for the RMSEA were considered to indicate acceptable and excellent fit, respectively. Nested model comparisons for tests of measurement invariance and predictive similarity were compared via the examination of changes (Δ) in goodness-of-fit indices, where a decrease in CFI and TLI of .010 or higher or an increase in RMSEA of .015 or higher indicates a lack of invariance.[53,54] Finally, we also computed model-based composite reliability indices[47,55] from the standardized factor loadings and the error variances associated with the items.

## RESULTS

### Descriptive Statistics and Measurement Models

Descriptive statistics, reliability indices, and correlations between the variables are presented in Table 2. The group-specific measurement models (Table 3) demonstrated adequate fit to the data in all subgroups (CFI and TLI > 0.90, RMSEA < 0.08).

Next, tests of measurement invariance were conducted on the separate models across the 4 groups. For sexual motivation, the negligible decrease in model fit (ΔCFI and ΔTLI ≤ 0.010 and ΔRMSEA ≤ 0.015) supported the configural, weak, strong, and strict invariance as well as the invariance of the latent variances-covariances and the invariance of latent means across groups. The compulsive sexual behavior measurement model was invariant up to the level of latent variances-covariances. However, latent mean invariance was not achieved based on the differences in fit indices (ΔCFI = -0.014, ΔTLI = -0.011, ΔRMSEA = +0.004). Consequently, we estimated a partial invariant model in which, based on modification indices, the latent mean of the global compulsive sexual behavior factor was freed up in the Hungarian women group. This partial latent mean invariant model, as well as the full latent mean invariant model for sexual motivation, was retained for interpretation.

**Table 2.** Descriptive statistics, reliability indices, and latent correlations between the Sexual Motivations Scale (SexMS) and the Compulsive Sexual Behavior Disorder Scale (CSBD-19)

| | Range | Mean (SD) | Skewness (SE) | Kurtosis (SE) | Cronbach's alpha ($\alpha$) | 1. | 2. | 3. | 4. | 5. | 6. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. CSBD-19 | 19–76 | 28.18 (9.02) | 1.39 (0.03) | 1.85 (0.05) | 0.91 | — | | | | | |
| 2. Intrinsic motivation (SexMS) | 4–28 | 21.93 (4.22) | -0.88 (0.02) | 1.12 (0.05) | 0.76 | 0.06 | — | | | | |
| 3. Integrated motivation (SexMS) | 4–28 | 19.34 (5.81) | -0.51 (0.02) | -0.34 (0.05) | 0.91 | 0.13 | 0.83 | — | | | |
| 4. Identified motivation (SexMS) | 4–28 | 18.46 (5.13) | -0.38 (0.02) | -0.17 (0.05) | 0.79 | 0.14 | 0.79 | 0.73 | — | | |
| 5. Introjected motivation (SexMS) | 4–28 | 12.08 (6.01) | 0.50 (0.02) | -0.58 (0.05) | 0.91 | 0.29 | 0.18 | 0.21 | 0.37 | — | |
| 6. External motivation (SexMS) | 4–28 | 8.47 (4.43) | 1.27 (0.02) | 1.67 (0.05) | 0.82 | 0.17 | -0.31 | -0.19 | -0.04 | 0.46 | — |
| 7. Amotivaton (SexMS) | 4–28 | 5.71 (3.12) | 2.93 (0.02) | 11.14 (0.05) | 0.85 | 0.13 | -0.77 | -0.64 | -0.42 | 0.14 | 0.65 |

CSBD-19 = Compulsive Sexual Behavior Disorder Scale; SD = standard deviation; SE = standard error; SexMS = Sexual Motivations Scale.
All correlations were significant at level $P < .001$.

**Table 3.** Measurement invariance of the Sexual Motivations Scale (SexMS) and Compulsive Sexual Behavior Disorder Scale (CSBD-19)

| Model SexMS | $\chi^2$ (df) | CFI | TLI | RMSEA | 90% CI | Comparison | $\Delta\chi^2$ (df) | $\Delta$CFI | $\Delta$TLI | $\Delta$RMSEA |
|---|---|---|---|---|---|---|---|---|---|---|
| CFA—Hungarian men | 9284.415 (237)* | 0.952 | 0.944 | 0.079 | 0.077–0.080 | — | — | — | — | — |
| CFA—Hungarian women | 3206.503 (237)* | 0.976 | 0.972 | 0.063 | 0.061–0.065 | — | — | — | — | — |
| CFA—German men | 423.904 (237)* | 0.967 | 0.962 | 0.068 | 0.057–0.078 | — | — | — | — | — |
| CFA—German women | 463.085 (237)* | 0.974 | 0.970 | 0.061 | 0.052–0.069 | — | — | — | — | — |
| 1. Configural invariance | 10815.007 (948)* | 0.970 | 0.965 | 0.065 | 0.064–0.066 | — | — | — | — | — |
| 2. Weak invariance | 10848.979 (1002)* | 0.970 | 0.967 | 0.063 | 0.062–0.064 | 2 vs 1 | 326.751[54],* | 0.000 | +0.002 | -0.002 |
| 3. Strong invariance | 13247.091 (1317)* | 0.964 | 0.970 | 0.061 | 0.060–0.062 | 3 vs 2 | 3719.583 (315)* | -0.006 | +0.003 | -0.002 |
| 4. Strict invariance | 12967.211 (1389)* | 0.965 | 0.972 | 0.058 | 0.057–0.059 | 4 vs 3 | 653.069 (72)* | +0.001 | +0.002 | -0.003 |
| 5. Latent variance-covariance invariance | 8993.947 (1452)* | 0.977 | 0.983 | 0.046 | 0.045–0.047 | 5 vs 4 | 709.859[63],* | +0.012 | +0.011 | -0.012 |
| 6. Latent means invariance | 9152.181 (1470)* | 0.977 | 0.983 | 0.046 | 0.045–0.047 | 6 vs 5 | 278.627[18],* | 0.000 | 0.000 | 0.000 |
| *CSBD-19* | | | | | | | | | | |
| Bifactor CFA—Hungarian men | 4154.343 (133)* | 0.953 | 0.940 | 0.077 | 0.075–0.079 | — | — | — | — | — |
| Bifactor CFA—Hungarian women | 2631.167 (133)* | 0.924 | 0.902 | 0.082 | 0.079–0.084 | — | — | — | — | — |
| Bifactor CFA—German men | 217.598 (133)* | 0.974 | 0.966 | 0.067 | 0.050–0.082 | — | — | — | — | — |
| Bifactor CFA—German women | 276.465 (133)* | 0.945 | 0.929 | 0.068 | 0.057–0.079 | — | — | — | — | — |
| 1. Configural invariance | 5855.292 (532)* | 0.957 | 0.944 | 0.069 | 0.068–0.071 | — | — | — | — | — |
| 2. Weak invariance | 5619.283 (628)* | 0.959 | 0.956 | 0.062 | 0.060–0.063 | 2 vs 1 | 344.522 (96)* | +0.002 | +0.012 | -0.007 |
| 3. Strong invariance | 5250.821 (709)* | 0.963 | 0.964 | 0.055 | 0.054–0.057 | 3 vs 2 | 215.561 (81)* | +0.004 | +0.008 | -0.007 |
| 4. Strict invariance | 4895.686 (766)* | 0.966 | 0.970 | 0.051 | 0.049–0.052 | 4 vs 3 | 325.965[57],* | +0.003 | +0.006 | -0.004 |
| 5. Latent variance-covariance invariance | 3416.796 (784)* | 0.979 | 0.981 | 0.040 | 0.039–0.041 | 5 vs 4 | 66.851[18],* | +0.013 | +0.011 | -0.011 |
| 6. Latent means invariance | 5046.952 (802)* | 0.965 | 0.970 | 0.050 | 0.049–0.052 | 6 vs 5 | 967.392[18],* | -0.014 | -0.011 | +0.010 |
| 6p. Partial latent mean invariance | 3978.106 (801)* | 0.974 | 0.978 | 0.044 | 0.042–0.045 | 6 vs 5 | 424.728[17],* | -0.005 | -0.003 | +0.004 |

CFA = confirmatory factor analysis; CFI = Comparative fit index; 90% CI = 90% confidence interval of the RMSEA; df = Degrees of freedom; RMSEA = Root mean square error of approximation; TLI = Tucker-Lewis index; $\chi^2$ = Mean- and variance-adjusted weighted least-squares estimator (WLSMV) chi-square test of exact fit; $\Delta\chi^2$ = Mean- and variance-adjusted weighted least-squares estimator (WLSMV) (calculated with the difftest function in Mplus); $\Delta$ = Change in model fit in relation to the comparison model.
*$P < .01$.

**Table 4.** Examination of the associations between the factors of the SexMS and the CSBD-19 in the multigroup predictive invariance framework

| Model | $\chi^2$ (df) | CFI | TLI | RMSEA | 90% CI | Comparison | $\Delta\chi^2$ (df) | ΔCFI | ΔTLI | ΔRMSEA |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Freely estimated associations | 9442.358* (1542)* | 0.977 | 0.982 | 0.046 | 0.045−0.047 | — | — | — | — | — |
| 2. Invariant regression slopes | 9389.985 (1560)* | 0.977 | 0.982 | 0.045 | 0.044−0.046 | 2 vs 1 | 53.055 (18)* | 0.000 | 0.000 | -0.001 |
| 3. Invariant regression intercepts | 9544.247 (1563)* | 0.976 | 0.982 | 0.046 | 0.045−0.047 | 3 vs 2 | 469.539 (3)* | -0.001 | 0.000 | +0.001 |
| 4. Invariant regression residuals | 9556.335 (1566)* | 0.976 | 0.982 | 0.046 | 0.045−0.047 | 4 vs 3 | 26.751 (3)* | 0.000 | 0.000 | 0.000 |

CFI = Comparative fit index; 90% CI = 90% confidence interval of the RMSEA; df = Degrees of freedom; RMSEA = Root mean square error of approximation; TLI = Tucker-Lewis index; $\chi^2$ = Mean- and variance-adjusted weighted least-squares estimator (WLSMV) chi-square test of exact fit; $\Delta\chi^2$ = Mean- and variance-adjusted weighted least-squares estimator (WLSMV) (calculated with the difftest function in Mplus); Δ = Change in model fit in relation to the comparison model.
*$P < .01$.

Final parameter estimates from the most invariant models are reported in Table S1 (for sexual motivations) and Table S2 (for compulsive sexual behavior) in the online supplements. Examination of these parameter estimates reveal well-defined and reliable motivational factors (intrinsic: $\lambda = 0.580-0.864$, $\omega = 0.839$; integrated: $\lambda = 0.843-0.906$, $\omega = 0.926$; identified: $\lambda = 0.679-0.844$, $\omega = 0.841$; introjected: $\lambda = 0.806-0.921$, $\omega = 0.931$; external: $\lambda = 0.700-0.900$, $\omega = 0.886$; and amotivation: $\lambda = 0.813-0.900$, $\omega = 0.927$). Additionally, the compulsive sexual behavior, the G-factor was well-defined and reliable ($\lambda = 0.412-0.830$, $\omega = 0.965$). Four out of the 5 S-factors retained a higher amount of specificity (salience: $\lambda = 0.377-0.525$, $\omega = 0.554$; relapse: $\lambda = 0.123-0.529$, $\omega = 0.633$; dissatisfaction: $\lambda = 0.635-0.735$, $\omega = 0.886$; negative consequences: $\lambda = -0.442-0.446$, $\omega = 0.637$), whereas the control S-factor appeared to retain a lower amount of specificity ($\lambda = -0.106$ to $-0.387$, $\omega = 0.291$) over and above the G-factor. As our goal was to achieve a global estimate of compulsive sexual behavior while maintaining control over subscale specificity, we only used the compulsive sexual behavior G-factor as an outcome.

### Examining the Associations Between Sexual Motivations and Compulsive Sexual Behavior

Results from the tests of predictive similarity for models are reported in Table 4 and support the complete predictive similarity (ie, invariant regression slopes, invariant regression intercepts, and invariant regression residuals) of these results across the 4 groups, suggesting no significant differences in the examined associations between German and Hungarian men and women. Therefore, following the principle of parsimony and the conventions of presenting the findings of predictive invariance testing, results are reported for the total sample (Figure 1).

Amotivation had the strongest positive association with compulsive sexual behavior ($\beta = 0.460$ [95% CI 0.353−0.566], $P <$

.001), while integrated ($\beta = 0.267$ [95% CI 0.218−0.316], $P < .001$), introjected ($\beta = 0.236$ [95% CI 0.207−0.266], $P < .001$), and intrinsic ($\beta = 0.229$ [95% CI 0.097−0.361], $P < .001$) motivations were also positively, but weakly related to compulsive sexual behavior. However, identified ($\beta = -0.133$ [95% CI -0.207 to -0.059], $P < .001$) and external ($\beta = -0.113$ [95% CI -0.164 to -0.063], $P < .001$) motivations showed negative and weak associations with compulsive sexual behavior. Sexual motivations explained 14.3% of compulsive sexual behavior (Figure 1).

## DISCUSSION

Expanding previous research, furthering knowledge on the theoretical conceptualizations of compulsive sexual behavior, and
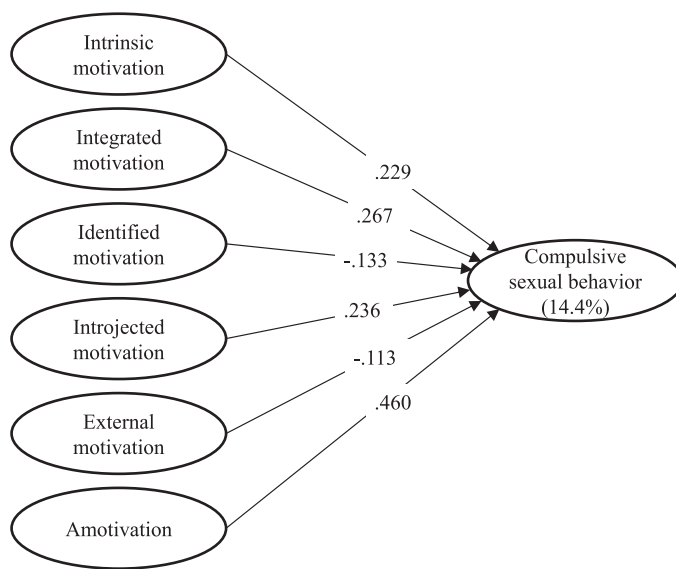


**Figure 1.** Visual presentation of the associations between the factors of the Sexual Motivations Scale (SexMS) and the Compulsive Sexual Behavior Disorder Scale (CSBD-19) on the total sample.

responding to recent calls emphasizing the importance of simultaneously examining different models of compulsive sexual behavior in diverse populations,[37] we aimed to examine sexual motivations underlying compulsive sexual behavior in 2 separate samples of women and men. Results indicate that higher levels of amotivation, integrated, introjected, and intrinsic motivation were related to higher levels of compulsive sexual behavior. Identified and external motivations were also weakly and negatively related to compulsive sexual behavior. These findings did not differ between Hungarian and German women and men.

We identified the potential role of a set of sexual motivations underlying compulsive sexual behavior that resembles the conceptualization of the Integrative Model of Compulsive Sexual Behavior,[33] namely, positive associations with amotivation, intrinsic, integrated and introjected motivations. Besides the Integrative Model of Compulsive Sexual Behavior,[33] these findings resembles Kafka's[29] Hypersexual conceptualization and the Addiction Model as well,[30] but to a lesser extent. These results contribute to the debate surrounding the conceptualization of compulsive sexual behavior as a pathological condition.[30,33]

## The Motivational Background of Compulsive Sexual Behavior

Compulsive sexual behavior's strong positive association with *amotivation* could be surprising at first. However, it might be due to the compulsive nature of compulsive sexual behavior emphasizing that loss of control over sexual behavior and engagement in sexual behaviors despite other intentions seems to be a central diagnostic in several concepts (Table 1). When the individuals are not conscious of the root of their action (the "why"), the repetitive behavior is "performed in a habitual or stereotyped fashion, either according rigid rules or as a means of avoiding perceived negative consequences."[56] This notion suggests that individuals rigidly and compulsively engaging in a given activity may not know the reason behind this engagement (ie, feelings of amotivation).

Although the ICD-11 neither includes integrated nor introjected or intrinsic motivations in the diagnostic guidelines for CSBD,[1] those motivations identified in our sample were listed among the features of the Integrated Model for Compulsive Sexual Behavior,[33] and partly listed among the DSM-V criteria of Hypersexual Disorder.[29] First, the current findings support the notion that high *intrinsic motivation* for sexuality (eg, high sexual desire) is in association with compulsive sexual behavior. Although accompanied by criticism,[57] Kafka's suggestion[58] of an increased or excessive sexual drive as a marker for compulsive sexual behavior, is supported by our data. However, an increased sexual drive in itself might not be a reliable or sufficient indicator of compulsive sexual behavior.[59,60] That said, even sexual motivations that are related to optimal functioning, as they can be beneficial for some people, have the potential to contribute to the development of compulsive sexual behavior. However, it is likely that highly autonomous motivations, such as intrinsic (ie,

having sex because it is pleasurable) and integrated (ie, sexuality being a meaningful part of a subject's identity) sexual motivations may only contribute to the development of compulsive sexual behavior when they co-occur with high levels of amotivation (ie, a loss of control over sexual behavior). This notion warrants further examination using person-centered statistical approaches that are naturally suited for the purpose of identifying unique combinations of motivations (eg, typical/frequent and less typical/less frequent motivational profiles), resulting in favorable or less optimal outcomes.[42,61]

Our findings also support the notion that *introjected* motivations (such as coping with negative emotions and stress using sexual activities) may be another important motivational factor underlying compulsive sexual behavior.[62] These 2 introjected motivations were listed among the proposed DSM-5 diagnostic criteria (ie, repetitively engaging in sexual behavior in response to dysphoric mood states or stressful life events) but are now absent in ICD-11.[1,29,63] However, longitudinal data suggests that using sex as a coping mechanism to emotional dysregulation could be an early marker of CSBD.[64] Furthermore, these motivations are mentioned also in the Integrated Model of Compulsive Sexual Behavior.[33] These results highlight that even though these motivations are not considered in the current classification in ICD-11, they should be addressed in future research to inform future classifications and better understand the clinical characteristics of compulsive sexual behavior.[26]

The associations between women and men's sexual motivations and compulsive sexual behavior did not differ significantly in the present study. Previous research indicates that people's motivations for having sex may differ for women and men.[14] Within heterosexual interactions, men are expected to initiate sex and pursue physical pleasure,[65] whereas gendered sexual norms suggest women have a relationship-centered view of sexuality, (ie, enhancement of intimacy and partnership bonding).[66] Not only does compulsive sexual behavior appears to occur in both women and men—as recently acknowledged,[40,41] but our results indicate that women and men seem to also share comparable sexual motivations when it comes to compulsive sexual behavior. Exaggerating gender differences in sexuality may be therefore problematic, given that stereotypes suggesting that women and men differ greatly on dimensions of sexuality (such as expressions of compulsive sexual behavior) can perpetuate the double standard what in turn might result in judging women's and men's sexuality by different standards.[67,68]

## Implications

The discussion around the precise conceptualization of compulsive sexual behavior is not only a theoretical issue for its own sake but represents a much larger scope of significance. Without proper and evidence-based models of the given construct (ie, compulsive sexual behavior) the assessment, the guidelines for diagnosis or the development of the potential treatment programs is impossible. Thus, making an attempt to identify the

conceptualization which fits the behavior the best is key. We identified a pattern of sexual motivations that most strongly resembles the conceptualization of compulsive sexual behavior Integrated Model of Compulsive Sexual Behavior.[33] Considering the motivational background of compulsive sexual behavior might be helpful for clinical practitioners to better understand their patients and guide their attention on the suitable aspects of the disorder regarding their treatment. Thus, future research and treatment approaches should consequently consider sexual motivations that are not listed among the ICD-11 guidelines, such as high levels of sexual interest as well as coping with sex. While the first may be subject to pharmacological treatments if it is associated with distress, the latter can be addressed by psychotherapeutic interventions that aim at developing other coping techniques such as mindfulness.[69]

## Limitations and Future Studies

Although we used 2 independent samples from 2 countries, an important limitation of the present study is the use of convenience samples of general populations in 2 Western countries.[24] Consequently, this motivational background of compulsive sexual behavior awaits replication in non-WEIRD (ie, Western, Educated, Industrialized, Rich, and Democratic) and clinical samples to corroborate our findings. Moreover, the study results lack generalizability, given that studies from a different cultural background may yield other motivational backgrounds of compulsive sexual behaviors since sexual behaviors are highly influenced by the cultural context of the studied population.[24] Although both samples (ie, Hungarian and German samples) met the requirements of the conducted analyses, it is important to note that the samples differed in size. This might be due to the different data collection advertisement strategies. Also, we used cross-sectional, self-reported data on self-selected samples that may be prone to biases (eg, social desirability or recall bias, under-reporting or over-reporting, or participation of individuals who were motivated to complete an online survey).

The present results call for further research in the area of amotivation in association with compulsive sexual behavior. The present study did not differentiate between the different types of amotivation (eg, lack of interest, lack of relevance for the individual, self-perceived incapability), hence leaving a gap regarding this subject. Furthermore, based on the present and previous findings,[10,42,70] person-centered approaches are highly recommended in the future of sexual motivation research, since motivations are not appeared to be exclusive, someone can feel internal and external pressures at the same time for certain behaviors, and sexuality is no exception.

## CONCLUSION

Addressing recent calls for the integrated examination of different models of compulsive sexual behavior in diverse populations,[37] we explored the roles of a diverse set of sexual motivations in compulsive sexual behavior, reflecting on the current theoretical conceptualizations of compulsive sexual behavior. Amotivation played the strongest role in compulsive sexual behavior, but integrated, introjected, and intrinsic motivations also positively contributed to compulsive sexual behavior, regardless of gender. These findings appear to support the Integrated Model conceptualization of compulsive sexual behavior, furthering our knowledge concerning the conceptualization of compulsive sexual behavior, and providing potential intervention targets in treatment settings.

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## SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jsxm.2021.11.005.