Bachelor's thesis

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Norwegian University of Science and Technology
Faculty of Social and Educational Sciences
Department of Psychology

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The association between the subjective feeling of sexual satisfaction and the frequency of sexual dreams

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Trondheim

Bachelor's thesis in Psychology
Supervisor: Wei Wang
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NTNU
Kunnskap for en bedre verden

Preface

This bachelor's thesis marks the end of a three-year bachelor's program in Psychology at NTNU Trondheim. The theme of this project was sexual satisfaction and sexual dreams, and the research question investigated the association between the subjective feeling of sexual satisfaction and the frequency of sexual dreams. The reason I wanted to investigate this specific topic was due to the lack of knowledge within its field, as well as the importance it holds to the well-being of many in our society. Based on these factors alone it is a necessity to conduct research regarding it, furthermore, there are many different areas justifying it as well. The process of writing has by far been the biggest challenge in the three years of studying psychology, but it has also been one of the most interesting. Though times with high workload and low motivation have occurred, my interest has easily been brought back by supporting words from friends and family, and as a result, I've learned a lot about the process of writing an article as well as a considerable amount of information regarding the main topics, sexual satisfaction, and sexual dreams, but also relating and associated themes. The developed ideas and hypotheses are mainly inspired by my own thinking but have been refined and redeveloped during literature searches, as well as due to guidance by my supervisors. Therefore, I want to thank my supervisors Wei Wang and Torhild Anita Sørengaard. Torhild has been of great help throughout the writing process, giving helpful information as well as spreading joy and motivation. Furthermore, I would like to thank Tiffany Lussier and Eline Eyde Lüder-Larsen who have assisted Wei Wang in the development of our surveys, and in addition been of great help by giving feedback and providing useful information and details. Lastly, I would like to thank all my co-students taking part in this project, who have been of great help recruiting participants and exchanging thoughts during free time and colloquiums.

Abstract

This study investigated the association between sexual satisfaction and sexual dreams. Research has previously investigated both variables separately, but the association between them has received less attention. Sexual dreams might function as compensatory mechanisms to heighten sexual satisfaction, or they can be mediated by experiences in waking day life. As our study sought to investigate this relationship, it gives information and data regarding the topics themselves, and how to perceive them. By utilizing surveys including variables such as sexual satisfaction, relationship status, gender, and sexual activity, 87 participants gave information about their dreams during a 28-day data collection period, where participants were to fill out one survey each morning. Results showed significant positive correlations between relationship status and sexual satisfaction, no correlation between sexual satisfaction and sexual dreams, and a small group difference within sexual satisfaction with higher scoring participants reporting more frequent sexual dreams. Almost no explanatory power for age, gender, relationship status, and sexual satisfaction in predicting sexual dreams was found. Future research should employ longitudinal designs as it seems best suited to give information regarding sexual dreams and sexual satisfaction over time. It should also include a Scandinavian sample and focus on mediating variables that might affect sexual satisfaction and sexual dreams directly and indirectly. As literature and knowledge develop, new insight will be brought forward regarding the mechanisms behind these variables, as well as contribute to the understanding of how they function dependently, independently, and how they affect other topics such as psychopathology.

Keywords: Sexual satisfaction, dreams, sexual dreams, continuity hypothesis, compensatory aspects of dreams, relationship status

The phenomenon of dreaming is well known throughout the human species, showing both different characteristics and prevalence based on one's country of origin (Djurich et al., 2019). Even though the phenomenon itself is well documented and the mechanisms behind dream experience start to unravel, the literature still lacks a reliable biological marker for dream experience (Zhang & Wamsley, 2019). Research, however, does provide growing evidence relating to the bi-directional relationship between dream content and psychopathology, and that dreams react to experiences with personal significance (Hedström et al., 2021; Solomonova et al., 2021). As some individuals are more susceptible to both the negative and positive outcomes of environmental influences, it is necessary to dig deeper into this already expanding field (Pluess & Belsky, 2009). Within it, sexual dreams may affect and reflect waking-day experiences, and the individual outcome might be influenced just the same as with the environmental factors noted by Pluess and Belsky (2009) (Chen et al., 2015; Gutiérrez-Puertas et al., 2017). Sexual dreams can also be reflective of relationship status and relationship satisfaction, of which the content might tell if one's satisfied or not (Clarke et al., 2010). Furthermore, Birnie-Porter and Hunt (2015) have shown significant correlations between relationship status and sexual satisfaction, where individuals who were engaged, or exclusively dated another reported higher degrees of sexual satisfaction. Similar findings were illustrated by Schoenfeld et al. (2017), in which sexual satisfaction, relationship status, as well as the frequency of sexual intercourse all positively correlated with each other. The aim of this study is to investigate the association between the subjective feeling of sexual satisfaction and the frequency of sexual dreams.

Dreaming and Sexual Satisfaction

Dreaming

Dreaming is characterized as "internally generated experiences that occur independently of current sensory input", and is closely related to activation in certain cortical pyramidal neurons found in the apical integration zone (Aru et al., 2020). In simpler terms, dreaming seems to be generated internally without being directly influenced by the physical world. The generation of dreams also seems to be connected to specific brain regions. Dream content is individual, and even though some characteristics seem to recur (e.g., falling, being chased, flying, and being unable to find a toilet) its content varies (Griffith et al., 1958; Schredl et al., 2004). As we shift from wakefulness to sleep, we seem to be less conscious of external stimuli before we eventually cease to be aware of it at all. Dreaming is often closely related to, but should not be mistaken for, REM (Rapid eye movement) sleep. Whereas

dreaming is the previously mentioned subjective experience, REM-sleep is a physiologically defined stage of sleep (Peever & Fuller, 2017). Moreover, the phenomenon of dreaming is not confined within the stages of REM-sleep as it just as well might occur in non-REM sleep, sometimes as a nightmare (Simor et al., 2013). Dreams outside REM has also been implicated in Simor et al. (2012), reporting irregular physiological reactions within nightmares, such as reduced sleep efficacy, decreased slow-wave sleep, and a higher number of nocturnal awakenings, especially from "Stage 2" sleep. This stage is characterized by specific EEG patterns, such as sleep spindles and K-complexes, and less than 30% delta wave activity, which makes up about 60% of a night's sleep (Carskadon & Dement, 2005; Fogel et al., 2009). Furthermore, dreaming happening later in the sleep cycle is often associated with negative emotion, and might often be characterized as bad dreams or nightmares (Conte et al., 2020). Dreaming, with all its variations, is therefore something one might experience regardless of position in the sleep cycle (Aru et al., 2020). Multiple theories have throughout history given their attempts on explaining dreams, only to be discarded or revised in due time. The "null theory" where dreams are byproducts of other adaptions, the thought that dreams exist so that organisms won't move during periods where it is not beneficial, and dreams as biological "spandrels" decorating sleep, serve as examples of the evolution the field has experienced (Domhoff, 2019; Flanagan, 2000; Siegel, 2011a, 2011b). More recently a new theory has emerged focusing on how dreams might have evolved to combat the brain's problem of overfitting, when performance on one dataset increases but the network's performance fails to generalize during daily learning, and is based on new insight in deep neural networks (Hoel, 2021). In other words, recent research supports the claim that dreaming has evolved in order to facilitate the learning and generalization of knowledge.

Sexual dreams

Dreams differ in many ways, with emotional arousal being one of its key defining characteristics. Sexual dreams are characterized as dream experiences with contents of sexual, erotic, or pornographic nature, and are related to both a high emotional and physical arousal (Chen et al., 2015; Wang, 2022). Sexual dreams are common, and approximately 70% of college students in Canada report experiencing them (Nielsen et al., 2003; Schredl et al., 2004; Yu, 2008). Furthermore, studies seem to show that women are less susceptible to sexual dreams than men (Schredl et al., 2009; Zanasi et al., 2012). Hmidan and Weaver (2019) however, did not find any gender differences in the frequency of sexual dreams, and moreover found that gender only accounted for 1.9% of the variance in sexual dreams. Other findings

support a hypothesis of continuity in dreaming, in which one's thoughts and fantasies in waking-life influence dreaming experiences, and growing evidence shows that sexual dreams are no exception (Hmidan & Weaver, 2019; King et al., 2009; Schredl, 2003). Hence why this hypothesis of continuity displays what might be one of the direct links between psychopathology and sexual dreams, with panic disorders or sexsomnia serving as clinical examples (Schenck, 2015). Yu (2012), however, showed contradicting results where people who were more sexually active during daytime showed no heightened frequency of sexual dreams. Furthermore, Yu and Fu (2011) observed an interesting phenomenon where some sexual behaviors deviating from regular sexual activities were more often described in sexual dreams. Such findings might support a different hypothesis, the compensatory aspects of dreams, where the dreams compensate for the fantasies not fulfilled in waking life (Mathes & Pietrowsky, 2022).

Sexual satisfaction

Sexual satisfaction is seen as an outcome of sexual well-being as well as an important component of sexual health, further defined by Lawrance and Byers (1995) as an affective response arising from one's subjective evaluation of the positive and negative dimensions associated with one's sexual relationship. It should not be mistaken for sexual stimulation, though there are links between them (Mallory, 2022; McNulty et al., 2014). Sexual stimulation has been described as touching, kissing, licking, or other manipulation of the genitals, breasts, or other areas of the body that leads to sexual arousal (*APA Dictionary of Psychology*, 2022). Sexual satisfaction is considered a key factor in relationship satisfaction, and approximately 46% of men and 58% of women in Australia considered themselves dissatisfied according to a study by Smith et al. (2011). Sexual satisfaction's association with frequency of sexual activity and sexual functioning seems explicit, in which a high level of them is related to a higher degree of sexual satisfaction (Birnie-Porter & Hunt, 2015). As identified by Smith et al. (2011), there appear to be clear gender differences in levels of sexual satisfaction with a higher percentage of women satisfied with their current frequency of sex, and where men more often than women desired sex more frequently. The effects of age, as well as desired sexual frequency, were found to have an effect when researching the matter, showing a decrease in sexual frequency as age increased (Baumeister et al., 2001; Butzer & Campbell, 2008; Davies et al., 1999; Smith et al., 2011). Furthermore, sexual satisfaction has been negatively associated with the level of anxiety and depression in adolescents and young adults (Carcedo et al., 2020). As the literature on sexual satisfaction

has expanded, connections regarding relationship quality, satisfaction, and stability as well as sexual frequency have been made (Birnie-Porter & Hunt, 2015; Wenzel, 2004). This goes to show that sexual satisfaction is a topic of relevance, thus worthy of further research and investigation.

Hypotheses within Dreaming

Hypothesis of continuity

The hypothesis of continuity suggests that there is a direct link between dream content and waking life experiences, and research indicates that subjective experiences are somewhat of a huge contributor (Pesant & Zadra, 2006; Schredl & Engelhardt, 2001). In other words, this hypothesis expects to find reflections of waking day life experiences within the dream content following. Everyday struggles related to interpersonal and emotional stressors seem to be of higher occurrence in dreams, thereby adding support to this association (Roussy et al., 1996). Some studies have found that psychological well-being is related to the occurrence of regular dreams and nightmares (Blagrove et al., 2004; Pesant & Zadra, 2006). Others report unusual dreaming patterns for patients suffering from psychopathologies, such as depression, in comparison to control groups (Schredl & Engelhardt, 2001). MacKay and DeCicco (2020) examined whether this continuity would be apparent in Canadians during the global COVID-19 pandemic, finding further evidence supporting the link between everyday life and thoughts in relation to dreaming, as the participants seemed to experience an increased amount of imagery related to the pandemic. Furthermore, evidence was illustrated as waking life aggression, especially hostility, was related to aggressive acts in nightmares (Mathes & Pietrowsky, 2022). However, many dreams seem to contain bizarre and unrealistic events, thus illustrating that some parts of the dreaming literature shows results contradicting to the continuity hypothesis (Schredl et al., 2004). Though, as the amount of research regarding the continuity of dreams continues to grow, the findings keep accumulating support for the hypothesis.

Compensatory aspects of dreaming

The compensatory aspect of dreaming is a hypothesis formulated by Carl Gustav Jung based on the idea that dreams serve as compensatory tools for individuals (Jung, 1950). The hypothesis has its origin in the thoughts of a dynamic equilibrium between contrasting elements, where what is conscious is compensated by what is unconscious. These thoughts are similar to many well explored Freudian ideas, such as the thoughts regarding the fight

between the conscious and unconscious (Domino, 1976). Support for this hypothesis can also be found in more recent studies, such as a study investigating the effects of the recent COVID-19 pandemic on our dreaming and consciousness. This study supplied evidence by connecting two subconscious responses: the personal and collective response, to the pandemic and its major impact on everyday life for the Italian population (Di Renzo & Tagliacozzi, 2021). Other findings suggest that compensatory dreams might function as a moderator between trauma and psychopathological symptoms and that dreams might help us contextualize an unlimited future in times of trouble, whilst some ideas see dreaming functions as a mechanism where one rehearses behavioral strategies in case they might come to use (Bryon, 2021; Punamaki, 1998). Schredl et al. (2004) found that dreams often included bizarre events not frequent in one's regular activities, something which might be due to compensation of unfulfilled wishes and needs. Nevertheless, some of the old thoughts of Jung and Freud have been revitalized by fresh research conducting research on how dreams might have a compensatory function. Mathes and Pietrowsky (2022) added support to this hypothesis when researching dreamers' aggressive behaviors in nightmares, finding that aggression within dreams might be due to failed aggression from waking life.

Present study

The presented literature explains important aspects of dreaming, with sexual dreams in particular, as well as different theories put forward as explanatory associations between waking-day life and the unconscious phenomenon of sleep. Furthermore, the subjective feeling of sexual satisfaction has been explained in order to understand how these different themes merge into each other when investigating the research question, "Is there an association between the subjective feeling of sexual satisfaction and the frequency of sexual dreams?". The majority of the literature so far focuses on only one aspect at the time, hence making the associations between sexual satisfaction and sexual dream frequency not yet thoroughly investigated. However, the literature is not completely missing and throughout this study contributions supporting different thoughts, elements and arguments will be revitalized in the discussion.

The following hypotheses are proposed established on competing theories regarding the link between dream- and waking life. The first hypothesis, hinging on the hypothesis of continuity, is that subjective experience of sexual satisfaction is positively related to the frequency of sexual dreams. The second hypothesis, originating from the compensatory

aspects of dreams, is that a higher subjective experience of sexual satisfaction is negatively related to the frequency of sexual dreams.

Methods

Procedure and design

The present study applied convenient sampling as selection method. This exact method of sampling was suitable as it allowed variety regarding variables such as age, ethnicity and socioeconomic status, thus making the sample more representable for a wider part of the population. March 11th 2022, an email was sent to anyone that had shown interest in participating in the research project. The interest was shown by submitting their e-mail in response to the convenient sampling. The e-mail contained links to two different surveys; Survey 1 and Survey 2, and the participant was asked to create an anonymous username they would use as identification during a four-week period of data collection. The participants were asked to fill out a survey every day during the period from March 11th, 2022 to April 8th, 2022, with survey 1 to be filled out the first day, and survey 2 every day for the rest of the period. The participants themselves could decide whether to answer the questionnaires in English or Norwegian.

The project was submitted to the Norwegian Centre for Research Data, NSD, in January, and was approved March 9th, 2022. The notification form number was 637636. The completion of the data collection was reported to NSD on April 25th, 2022. In all surveys, the participants were asked whether they would give or withhold their consent regarding the further use of their data in relation to this research project. All participants proved informed consent.

The project has collected data on various demographic variables, and in particular data regarding participants' dream-experiences. The effects and links between the many variables have been portrayed in participants aging 18-years or older. The method of data collection was through electronic surveys and standardized questionnaires specialized for sexual dreams and nightmares. The collection of data was primarily established by recruitment of friends, family, coworkers, and others with relation to the project group. Recruitment was mainly based on one-to-one interaction between participants and a member of the project group, and the only criteria for participation were that the participant was aged 18 or older at the time of consent. From the 87 participants that completed the first survey, only 70 (81%) proceeded to complete at least one of the following surveys. Furthermore, this states attrition of 17 (20%) participants. Following the 28-day collection period, one would expect a total of 2436

submitted surveys. However, only a total of 1034 surveys were collected, generating a response rate of 42%. One should note that these factors have not been taken to account in the following analyses except when a mean score is necessary for the specific variable included.

Sample

The sample was recruited by 11 students working on this particular bachelor's project. The participants consisted of friends, family, other students, and coworkers, and was recruited using convenience sampling. In total, the sample included 87 participants (N=87), of which 40 men (46%) and women (54%) participated with an age-span raging from 20 to 78, M = 29.27, SD = 12.75. The majority was aged between 20 and 25 (66%). The participants aged from 26 to 31 was responsible for the next 15%, and from there on the participants aged 32 or older made up 19% of the sample size. The majority, 55%, of the participants were in a relationship (N = 48), with 45% not in a relationship (N = 39).

Instruments and measures

The participants were to fill out a dream record survey every day for a 28-day period. The project used four different surveys throughout its collection period, where one functioned as a baseline survey containing many different demographical items as well as items regarding their dreams the prior night. For the rest of the 28-day period the participants were given a smaller, more compact survey containing items regarding their dreams and other variables that might influence them. If the participants experienced a dream characterized as a sexual dream or a nightmare, they were given a standardized questionnaire specifically targeting the dream-type. However, these questionnaires: Sexual Dream Experience Questionnaire (SDEQ) and Nightmare Experience Questionnaire (NEQ), were not used in the analysis and holds no relevance for this particular project. Therefore, there will be no further elaboration upon them.

Dreams

During this project, we utilized different surveys when collecting data. At the start of collection, the participants filled out a survey collecting data on multiple demographic variables. The participants were to fill in their exact age, gender, if they were in a relationship or not, as well as rate their subjective feeling of sexual satisfaction. The latter was given as a statement, "*In general, I feel sexually satisfied*", where the participant was to give an answer raging from 1, "Very accurate", to 5, "Very inaccurate". In the analysis, scoring for sexual

satisfaction was reversed in order to make a higher degree of sexual satisfaction correspond to a higher score. From there on the participants were to answer a different, more compact, scheme throughout the rest of the collection period. The second survey contained similar, however fewer, items and therefore directed focus to different aspects of dreams or factors that might affect them, such as "*Briefly describe the contents of your dream*" and "*Which activities did you engage while in bed before falling asleep. Check all that apply.*".

In addition to the items mentioned, the participants were asked what type of dream they dreamt, of which two of the five alternatives given were "Sexual dream" and "Nightmare". If the participants were to have experienced any of these, they had to fill out different questionnaires relevant to that specific type of dream. If a participant experienced a sexual dream the previous night, they were to fill out the SDEQ, and if they had experienced a nightmare, the NEQ was to be completed. Since neither of the questionnaires was used in this project there will, as mentioned, be no further elaboration regarding them. The item, frequency of sexual dreams, is measured by adding all sexual dreams experienced during the collection period into one total score, where checking the alternative "sexual dream" leads to incorporation in the variable described.

The surveys used had to be available in both English and Norwegian, and were therefore translated back and forth from English to Norwegian and then back to English in order to provide the best possible translation.

Statistical analysis

The statistical analysis used in this bachelor's thesis is a product of IBM SPSS Statistics, version 28.0.1.0 (142). A Pearson's correlation analysis was conducted to investigate the association between the variables age, gender, relationship status, sexual satisfaction, and sexual dreams. Furthermore, the same variables were used in a hierarchical regression analysis for one to explore how the independent variables age, sex, relationship status, and sexual satisfaction explained the dependent variable sexual dreams. However, all the prerequisites necessary for a hierarchical regression analysis were not met. Meaning one should interpret the results with caution. The prerequisites consist of independence, outliers, linearity, homoscedasticity, and multicollinearity (Field, 2018).

As the first step, when checking whether the prerequisites were met or not, the independent variables were characterized as continuous or dichotomous. The dichotomous variables gender and relationship status, gender coded as 0 (woman) and 1 (man) and relationship status coded as 0 (not in a relationship) and 1 (in a relationship), were then

included. Furthermore, the continuous variables age and sexual satisfaction also met the prerequisites and were therefore included in the analysis. The dependent variable sexual dreams were also included, as it was coded at a ratio level. Next, the assumption of linearity was made between the dependent and the independent variables, and it was expected based on a plot of residuals against the predictor variable that the prerequisite of linearity would not be met in a satisfactory matter. The same scatterplot was used to assess both the independence and homoscedasticity, of which the results indicated that neither met the necessary criteria. Though there are different possibilities where one transforms the data in such a manner that it fits with the prerequisites, they were not utilized in this project. When assessing the multicollinearity with the Pearson's correlation analysis, the low correlation suggests that there was no multicollinearity within the data, thereby meeting the prerequisite. Collinearity Statistics when performing the hierarchical regression analysis supported this claim as the VIF-values were lower than 10 while the average VIF was close to 1. A Durbin-Watson value, Durbin-Watson = 2.12, further reinforced this understanding.

Finally, an independent t-test was done to state the differences of sexual frequency between those scoring from 1 ("very inaccurate") to 3 ("neither accurate or inaccurate") on sexual satisfaction and those scoring 4 ("accurate") or 5 ("very accurate"). The first group was named "low sexual satisfaction", whilst the latter was labeled "high sexual satisfaction".

Results

Table 1 illustrates mean, standard deviations as well as correlations between the variables included. There were no significant, $p > .05$, correlation between the variables sexual satisfaction, $M = 3.59$, $SD = 1.16$, and sexual dreams, $M = 0.50$, $SD = 0.81$, $r(85) = .01$, $p = .949$. Furthermore it illustrates a positive significant, $p < .05$, correlation between age and relationship status, $r(85) = .30$, $p = .006$, and between relationship status and sexual satisfaction, $r(85) = .52$, $p < .001$. Age correlated negatively with sexual dreams, $r(85) = -.21$, $p = .083$, but was not significant. There were no significant correlations found between gender, $M = 0.46$, $SD = 0.50$, and sexual satisfaction or sexual dreams.

Table 1

*Descriptive statistics and Correlations between variables; Age, Gender, Relationship status, Sexual satisfaction and Sexual dreams (*N *= 87)*

Variable	1	2	3	4	5
1. Age	-	.09	.30**	.11	-.21
2. Gender[a]	-	-	-.10	-.05	.00
3. Relationship status[b]	-	-	-	.52***	.02
4. Sexual satisfaction[c]	-	-	-	-	.01
5. Sexual dreams	-	-	-	-	-
M	29.27	0.46	0.55	3.59	0.50
SD	12.75	0.50	0.50	1.16	0.81

[a] 0 = Woman and 1 = Man.

[b] 0 = Not in a relationship and 1 = In a relationship.

[c] 1 = Very inaccurate, 2 = Somewhat inaccurate, 3 = Neither accurate or inaccurate, 4 = Somewhat accurate, 5 = Very accurate.

*$p < .05$. ** $p < .01$. ***$p < .001$.

Table 2 illustrates the results and summary from a hierarchical regression analysis containing two models. The first model contained age and gender, whilst the second also included relationship status and sexual satisfaction. Model 1 explained 5% of the variance in sexual dreams, $R^2 = .05$, $F(2, 65) = 1.53$, $p = .224$. Model 2 increased the ability of explanation with 1%, $\Delta R^2 = .01$, $p = .787$, $R^2 = .05$, $F(4, 63) = 0.87$, $p = .787$. Age was the strongest predictor in Model 2, $\beta = -0.24$, $p = .068$, before relationship status, $\beta = 0.10$, $p = .511$, however, they were not significant. Neither gender, $\beta = 0.03$, $p = .808$, nor sexual satisfaction, $\beta = 0.02$, $p = .916$, was significant. With lack of significance, it should be noted that all interpretation should be performed with uttermost caution.

Table 2

*Summary of a hierarchical regression analysis predicting frequency of sexual dreams with the variables age, gender, relationship status and sexual satisfaction (*N=*68)*

	Sexual dreams				
Variable	*b*	*SE b*	β	R^2	ΔR^2
Model 1				.045	.045
Age	-0.01	0.01	-0.21		
Gender[a]	0.02	0.20	0.01		
Model 2				.052	.007
Age	-0.01	0.01	-0.24		
Gender[a]	0.05	0.21	0.03		
Relationship status[b]	0.16	0.24	0.10		
Sexual satisfaction[c]	0.01	0.10	0.02		

Note. Three decimals are included when reporting R^2 and ΔR^2 to ensure a sufficient amount of details.

* $p < .05$.

An independent t-test found no significant difference between high sexual satisfaction, $M = 0.56$, $SD = 0.92$, $n = 41$, and low sexual satisfaction, $M = 0.41$, $SD = 0.63$, $n = 29$, in sexual dreams, $t(67.92) = 0.79$, $p = .430$, of which high sexual satisfaction scored minimally higher, $\Delta M = 0.15$. A small effect size was detected, $d = .18$.

Discussion

The main aim of this study was to investigate the association between subjective sexual satisfaction and the frequency of sexual dreams. Through a correlational analysis, there was found a moderate positive association between relationship status and sexual satisfaction, as well as between age and relationship status. Other associations, such as a negative correlation between age and sexual dreams, were identified but not significant. The analysis did not indicate any association between sexual satisfaction and sexual dreams. These results suggest that individuals in a relationship have a higher level of sexual satisfaction, while also indicating that with higher age one is more likely to be in a relationship. The negative association between age and sexual dreams might indicate that the frequency of sexual dreams descend as one gets older, but is not supported by significance. The hierarchical

regression analysis showed that age and gender explained 5% of the variance in sexual dreams, with an increase of 1% when adding relationship status and sexual satisfaction. These results, however, were not significant. Lastly, the independent t-test showed a non-significant difference between high and low sexual satisfaction, with the highly satisfied group scoring higher on sexual dreams.

The hypotheses did not gain support in thoughts of significant effect sizes, but tendencies were illustrated in the sexual dream frequency when comparing the participants' sexual satisfaction. The heightened frequency of sexual dreams in the group more sexually satisfied supports the claim that these two variables are related, and from there on might support both the continuity and the compensatory hypotheses. One might argue that the high degree of sexual satisfaction induces the heightened frequency of sexual dreams, thereby supporting the continuity hypothesis, but one cannot for certain discard the compensatory theory as the level of sexual satisfaction in fact might be induced by the sexual dreams themselves. Nonetheless, these tendencies do support former research in relating these variables (Birnie-Porter & Hunt, 2015; Clarke et al., 2010; Dreaming, 2021).

It should be mentioned that significance is often seen as a criterion for publication and relevance within research fields, but the Null Hypothesis Significance Testing (NHST) has still received a considerable amount of criticism throughout the years. Different methods of result evaluation have emerged, e.g., Bayesian inference and analysis of credibility, for one to obtain a better understanding of the results (Steenbergen, 2019). However, such methods have not been applied during this project, therefore causing the discussion to be based on NHST.

Sexual satisfaction and sexual dreams

As the main aim of this study was to further investigate the association between sexual satisfaction and sexual dreams, both a correlation and regression analysis, as well as a t-test were utilized as tools for one to draw, if plausible, any conclusions. As the correlation analysis shows, there was no significant finding between these two variables, and even though it lacked significance, the correlation was close to non-existing. These results indicate a non-existing relationship between sexual satisfaction and sexual dreams, a result contradicting former research, e.g., Clarke et al. (2010) and Wenzel (2004). These results give no further support to the hypotheses presented, neither the continuity hypothesis nor the compensatory aspects of dreaming.

However, non-significant results must not be interpreted as certain facts. Therefore, they cannot conclude that a connection between sexual satisfaction and sexual dreams does

not exist. As mentioned, the literature regarding this matter conveys a different understanding where different connections seem apparent (Birnie-Porter & Hunt, 2015; Butzer & Campbell, 2008; Smith et al., 2011; Wenzel, 2004). In this project, the sample contained 87 individuals, a rather small sample size for producing both significant results and decent effect sizes. This opens up the possibility that our results would have been eminently different if our sample size were greater, and one might argue that our findings can be a result of a small sample size rather than no actual effect (Khalilzadeh & Tasci, 2017). This would mean that even though our correlations are both low and non-significant, in reality, they might actually be present. If so, they would support the literature in thinking there in fact is a connection between the two variables. Furthermore, this would support both hypotheses mentioned due to the fact that it would tie the variables tighter together through correlations. However, a correlation analysis itself is not enough for one to give direct support to either hypothesis.

By running an independent t-test, a group difference between high and low degree of sexual satisfaction in regard to the frequency of sexual dreams was presumed. As a difference could give support to both hypotheses, such a finding would hold great importance. As the results illustrate, there was a small difference between the groups, where high sexual satisfaction showed higher frequencies of sexual dreams. Significance was yet again not below the cut-off criterion, albeit not unexpected due to the small samples. Including 41 (high on satisfaction) and 29 (low on satisfaction) participants, respectively. For significance to be established one should at least have a sample size of 1398 (699 per group) which is extremely far apart compared to our sample size (Khalilzadeh & Tasci, 2017). Furthermore, the power of the results and the study might therefore be affected by our sample size, with small effects being hard to detect with smaller-sized samples (Verma & Verma, 2020). However, these results are not irrelevant. Even with the small sample, expected tendencies were established where the more satisfied group had a higher frequency of sexual dreams. This might support the continuity hypothesis where what we experience in waking day life is reflected during dreaming, and it is not farfetched to believe that a higher degree of sexual satisfaction is correlated with higher frequencies of experiences of sexual content. Some studies support these claims, e.g., Cheung et al. (2008), McNulty et al. (2014), Schoenfeld et al. (2017), making the association between them seem clear. Hence why a high degree of sexual satisfaction might be induced by sexual frequency, which in turn affects the frequency of sexual dreams as suggested by the continuity hypothesis. Despite these thoughts, a conclusion still cannot be drawn. Another explanation might be that sexual dreams work as compensators. If so, the heightened frequency of sexual dreams might induce a higher degree

of sexual satisfaction by giving individuals the necessary stimulation during sleep. Our results can therefore not be used to decide whether sexual dreams are induced by sexual satisfaction or the opposite.

In hopes of determining where such inducement occurs, a hierarchical regression analysis was conducted. Once again, the results came out non-significant, as well as with a small effect size where age, gender, relationship status, and sexual satisfaction seemed only to explain about 5% of the variance of sexual dreams. One way to interpret these results function as support to the compensatory hypothesis as the lack of explanation, specifically from sexual satisfaction, might be due to the effect sexual dreams have on sexual satisfaction themselves. In agreement with this hypothesis, it would mean that the direction of the association investigated is opposite to what would occur based on the continuity hypothesis, and that the occurrence of sexual dreams compensates for the lack of sexual interaction and stimuli, as elaborated upon earlier. By stimulating oneself during dreaming, the overall perceived satisfaction might be elevated, which could cause the lack of explanatory power the sexual satisfaction variable yielded. To further support these thoughts, a new hierarchical regression analysis, where sexual satisfaction and sexual dreams switched places, could be conducted. However, this was not done during this project and is therefore something to be considered in later research.

The continuity hypothesis does not draw a lot of support from these findings. One could imagine a larger predictor effect from sexual satisfaction, albeit our results beg to differ. The predictor effect illustrated shows almost no effect which does not support the thoughts of a relationship where a high degree of sexual satisfaction predicts higher frequencies of sexual dreams. One should mention, once again, that these results do not meet the criterion for significance, making it difficult to disregard the huge amount of literature stating the opposite. Additionally, as all the prerequisites were not met either, it further adds support favoring the literature. Thus, further studies including a more suitable sample should be conducted.

Sexual satisfaction, relationship status, and sexual dreams

The association between sexual satisfaction and relationship status was investigated using a correlational analysis, which resulted in a significant moderate positive correlation. These findings support previous research further illustrating an association between sexual satisfaction and relationship status, e.g., Carcedo et al. (2020), Clarke et al. (2010), with Carcedo and colleagues illustrating more difficulties in sexual satisfaction for individuals not in a relationship. However, some studies such as Park and MacDonald (2022) show somewhat

contradicting results where the correlation between sexual satisfaction and relationship status only exists when frequent partnered sexual acts were present, and that the positive effects on sexual satisfaction were based on partnered sexual acts itself rather than one's relationship status. Although this might be, it is not farfetched to believe that being in a relationship might increase the frequency of partnered sexual acts in comparison to the mean partnered sexual acts when not in a relationship. Thus, relationship status might serve as an indirect connection affecting one's sexual satisfaction. Research done by Grøntvedt et al. (2019) further elaborated upon the relation between frequency of sex and sexual satisfaction, showing that there is a bond between them whilst also illustrating a decrease in intercourse as the length of the relationship increases. This decrease might affect the level of sexual satisfaction, and so on influence our research question and the frequency of sexual dreams.

In the hierarchical regression analysis conducted relationship status was, though small, the second most influential predictor of sexual dreams. Despite the fact that results were non-significant they might indicate that whether one is in a relationship or not affects the frequency of sexual dreams. However, by utilizing common sense one might hypothesize that it is not whether one is in a relationship or not that holds the actual effect, but rather the different factors that are included in a relationship. More exposure to sexual activities, time spent with a potential mating partner, children, and perhaps an increased mood might serve as possible examples influencing the frequency of sexual dreams instead of the relationship status itself (Xiang et al., 2021). It is feasible to think that the effect we got with the item measuring relationship status overshadows variables that in reality cause the effects.

The findings discussed does not give undisputable support to either of the hypotheses, but when further investigating the relationship between relationship status, sexual satisfaction, and frequency of sexual dreams, one might argue that it is reasonable to believe an indirect association between relationship status and sexual dreams is present, where there are different aspects included when being in a relationship that affects the frequency of sexual dreams. Moreover, the access and somewhat heightened sexual frequency caused by a relationship support the continuity hypothesis as it displays that exposure to sexual activities and content might induce sexual dreaming. The non-significant and low correlation between relationship status and sexual dreams does however indicate the opposite. The lack of correlation stipulates a non-existing relationship where there is no connection between the variables, meaning that relationship status and sexual dreams appear completely independent from each other. These thoughts nonetheless strongly contradict the literature seen during this project, making the rejection of them inevitable. Therefore, it is feasible to further investigate the

thoughts of present relationships, as presented by Carcedo et al. (2020), Clarke et al. (2010), Grøntvedt et al. (2019), and Park and MacDonald (2022), while not determining which direction the link should trend but making sure that the relationship in fact is present.

With negative correlations between sexual dreams and relationship status, one would find support for the compensatory aspects of dreams as it would mean that the lower frequency of partnered sexual acts induces a higher frequency of sexual dreams and that one needs to compensate for the lack of the fulfillment of sexual desires. In this particular project, the group difference between whether one is in a relationship or not has not been investigated regarding the frequency of sexual dreams. However, the literature presented does imply that people in a relationship have more frequent partnered sexual acts and that this in turn is related to sexual satisfaction and sexual dreams, which does not support the compensatory aspects of dreams. The continuity hypothesis does nonetheless benefit from these kinds of findings, thus gaining support from most of the literature.

A combination of continuity and compensatory aspects within sexual dreams

Despite the thoughts presented the answers are rarely explained with such ease. It is therefore important to discuss and evaluate different opportunities as well. In this project, there has been a spotlight on two competing hypotheses where it seems that only one of them might rule. In reality, however, the associations discussed might be due to a combination of both hypotheses. The different means used throughout the project might indicate relatedness in contrasting directions, but they do not give insight into what lies behind them. Using the significant positive correlation between relationship status and sexual satisfaction as an example, one can assume that individuals in a relationship have a higher level of sexual satisfaction and that this then again will cause an increased frequency of sexual dreams due to the heightened contact with sexual activities such as partnered sexual acts and intercourse. This is in line with the hypothesis of continuity. However, we cannot dismiss a thought where the sexual satisfaction is at a higher level due to the frequency of sexual dreams, and that the level of sexual satisfaction would have been lower if the sexual dreams were not present. The link between relationship status and sexual satisfaction might be explained by other factors, for instance, staying in a relationship longer when the feeling of sexual satisfaction is higher regardless of what causes the satisfaction. This thought is contrary to the continuity hypothesis, but functions as support for the compensatory aspects of dreaming. Our results may therefore be interpreted with a confirmation bias where one finds the results to explain the expected and wanted hypothesis, or the results may contain stronger evidence for one of

the hypotheses making it so the effects in line with the other hypothesis are overshadowed. Hence why a third thought may be more suitable: a combination of the two presented hypotheses for sexual dreaming in which sexual dreams are induced by high levels of sexual satisfaction when this is present, but when the sexual satisfaction is low the sexual dreaming works compensatory to heighten the sexual satisfaction. Newly published research investigated both the continuity hypothesis and compensatory aspects of dreams, finding that aggression might both be related to aggression and to failed attempts of aggression during waking life, adding support to both hypotheses (Mathes & Pietrowsky, 2022). Such findings might support the thought of both hypotheses cooperating, but this, however, is still a thought to be further investigated and elaborated upon in later studies which should be imminent.

Gender differences

There were found no gender differences in the frequency of sexual dreams based on the correlation analysis, though non-significant, indicating that whether you are a man or a woman you would experience the same variance of sexual dreams. Even though the absence of gender differences doesn't have a direct link to the hypotheses discussed, they might imply that the mediating factor for sexual dreams is either the sexual satisfaction and heightened frequency of activities such as partnered sexual acts, in line with the continuity hypothesis, or the opposite. In this case, the sexual dreams might function as compensatory for one to experience a higher degree of sexual satisfaction, in line with the compensatory aspects of dreaming. In other words, by removing the possibility of gender differences concerning sexual dreams, other factors might play a bigger role in influencing them.

The lack of correlation between sexual dreams and gender differences does not fit well with parts of the existing literature. Some studies found that women were less susceptible to sexual dreams, e.g., Schredl et al. (2009), Zanasi et al. (2012), Gutiérrez-Puertas et al. (2017), and furthermore that men put more importance on them. However, these findings do not stand unchallenged. Hmidan and Weaver (2019) did not find any gender differences in the frequency of sexual dreams, and moreover found only a small percentage when checking for gender's explanation of variance in the hierarchical regression analysis previously mentioned. These contradicting results within the current literature does, however, give incentives for our results to be taken seriously and not be dismissed without proper examination, thus adding support to both our hypotheses as discussed previously.

Strength and limitations

This study contained both strengths and limitations, of which the different ones can be used for later research to further utilize the strengths while using the limitations to improve where need be. The use of surveys originally found in English creates a situation where whether the outcome is a limitation or a strength is based on the quality of translation between languages. SDEQ and NEQ, developed by Chen et al. (2015) and Chen et al. (2014) respectively, were originally in Chinese before being translated to English, whilst the surveys assessed throughout this project were found in English. Before data collection could begin, the surveys had to be translated to Norwegian as the participants were to have the option to choose what language they wanted to use. Different languages, especially languages with divergent origins, tend to have lingo and sayings which appear to have no meaning when translated directly into another language. Within science, the use of corpus linguistics is often used to counteract these challenges (Khakimzyanova & Shamsutdinova, 2016). In our case, translation across languages comes with a risk of leaving marks on the final questionnaire where items might be misunderstood. Corpus linguistics has, to the extent of my knowledge, not been used. However, even though there is a possibility that the translation will function as a limitation if it is not done in a satisfying manner, there is reason to believe that our study solved this challenge in a pleasing way. This is due to the fact that the questionnaires were further translated back to English from Norwegian in order to examine the possible misconceptions. Thus, it is safe to say that the possible limitation was identified and then dealt with in the best way possible when performing this project.

Our sample size, however, is something that is certain to be seen as a limitation of our study. As mentioned previously in the discussion, our sample consisted of 87 participants where only 70 of them continued submitting surveys after baseline. With such a small sample size significant results were hard to come by, as illustrated by Khalilzadeh and Tasci (2017). The size of our sample would also affect the power of the study, where small sample sizes probably will fail to detect small effects, such as explained by Verma and Verma (2020). In our study, most of the results lacked effect size, which may be due to the shortage of participants. Therefore, it is plausible to think that our results would have been different if a larger and more suitable sample was available.

Despite the fact that the sample size was small, the sample was not completely devoid of suitability. The age span of our sample was wide, covering ages between 20 and 78 years of age. Even if the one participant aging 78 would have been seen as an outlier our mean age is still approximately 29 with a standard deviation of almost 13 years, meaning the coverage

is large compared to many similar projects whose samples exclusively include students, e.g., Chen et al. (2014), Chen et al. (2015), Gutiérrez-Puertas et al. (2017), King et al. (2009), Nielsen et al. (2003), and Wang (2022). In our study, the sample contained both students and most likely a group of other professions. However, it should be noted that the participants did not inform what profession they were involved in during the surveys, but it is reasonable to believe that the older participants most likely have a full-time job. Therefore, both the quite wide age span, as well as the diversity of different occupations, serve as strengths to our study as it gives a better insight into a normal population.

An additional strength of our project and specifically our sample is its origin. As our sample mainly consists of Nordic participants, it serves to give new uninvestigated information to the research field due to the shortage of research with Nordic and Scandinavian samples within it, at least based on the literature regarded. This allows one to further guide the field and perhaps give insight to factors such as the sexual satisfaction and sexual dreams of northern populations, thus functioning as a great strength to our project.

Other limitations are in connection to the design of the study, of which self-report, operationalization of both sexual satisfaction and sexual dreams and the effect of practice might serve as examples of these limitations. When using self-report surveys one gives the participants a lot of responsibility in reading, understanding, and filling out the questionnaires. As the likelihood that participants are well equipped with knowledge of how to fill out scientific questionnaires as well as holding information and understanding of sexual dreams and sexual satisfaction is low, one might expect that the data collected includes many different misunderstandings. One specific example is when answering what type of dream one experienced. Self-report biases are not uncommon and might be apparent due to different reasons such as bad self-assessments and positive and negative overrating, but it might also be due to misunderstandings (Devaux & Sassi, 2016). Here the participant is met with different alternatives, such as nightmare, sexual dream, or bad dream. If the participant had experienced an unpleasant dream, the absence of characteristic explanations or criteria makes it so that it is up to each individual to decide what type of dream it was. In regard to sexual dreams, one could quite possibly mistake a sexual dream for an ordinary dream containing some aspects of erotic content. Some nightmares might also contain sexual aspects, creating a dilemma for the participant. This might cause a bias in which some participants will overreport the presence of nightmares whilst others underreport. Moreover, the same goes with sexual satisfaction where oneself is responsible for understanding what this term involves.

The scores of this specific variable were based on the participants' single answers during baseline, causing the possibility to investigate the association between sexual satisfaction and frequency of sexual dreams over time more difficult. This might further function as a limitation as it makes the variable susceptible to influence. Mood, life events, and fatigue serve as examples possibly affecting the answers (Hu et al., 2013; Wegener et al., 1994). Hence why the results might contain a bias where different factors have skewed our outcome of sexual satisfaction and the frequency of sexual dreams. However, if one were to ask the participants to evaluate their sexual satisfaction in every survey one could find mean scores and improve the accuracy considerably. One could also have used standardized measures when investigating sexual satisfaction. The Global Measure of Sexual Satisfaction (GMSEX), is an example of such, though Lawrance & Byers developed it specifically for people in committed relationships (Byers, 2005). This questionnaire utilizes the rating of sexual satisfaction on five different 7-point bipolar scales, collecting a total score from 5 to 35, with higher scores indicating greater sexual satisfaction, and has been further validated by others (Lawrance & Byers, 1995; Pascoal et al., 2013). Adding some strength to our use of self-reports, however, is the use of anonymization, as anonymity seems to reduce social desirability and increase honest feedback (Tourangeau & Yan, 2007).

Another factor one should mention is the effects of practice. As one starts utilizing a dream diary you often find it easier to remember your dreams as time passes and you've focused on doing so. This might be due to a training effect, and it would mean that the reported dreams increase as the data collection stretches, which is not uncommon in test-retest designs or other designs where people perform similar tasks multiple times (Erickson et al., 2011; Heijl et al., 1989; Katie Foreman et al.; Schumacher et al., 2019). In a longitudinal study over several months, this effect curve would probably flatten out and give precise estimates, but as our data collection only included one single month it could be sensitive for such an effect. Furthermore, early morning REM-sleep is often associated with more negative emotion in comparison to dreams occurring earlier in the sleep cycle, which might also cause one to remember the bad dreams as it is the most recent dream, instead of a sexual dream which occurred earlier the same night, thus reporting the nightmare or bad dream and creating a bias (Conte et al., 2020).

However, even though our design contains some flaws it does not imply that it is an inadequate design. A longitudinal study design as utilized in our study seems to be the best possible way to investigate the associations of interest. With such a design one is able to follow participants over a longer period of time without intervention to their daily life,

increasing the ecological validity. In comparison to different designs such as laboratory studies or other observational studies, this seems to be suitable. As mentioned, the study would have benefitted from a longer duration of data collection, but 28 days is still able to produce large amounts of data. In comparison to similar projects, such a duration could quite possibly be considered long and at the very least extensive. Therefore, our study design also provide the project some strengths.

Lastly, the mechanisms responsible for dreaming are yet to be understood in its entirety. Multiple theories have emerged over the years, and with advances within the biological function of sleep, they have both been rejected as well as further assessed and revised (Domhoff, 2019; Flanagan, 2000; Hoel, 2021; Siegel, 2011a, 2011b). Due to the lack of consensus, our study will add data possibly helping further development within the field. In any case, the possibility of contributing to such developments should be seen as a strength of the study, as it is seen in ours.

Implications for practice and further research

This study sought to illuminate the associations between sexual satisfaction and sexual dreams, as well as investigate how relationship status and gender might also have an effect. Former studies, e.g., Hedström et al. (2021), Hoel (2021), Mallory (2022), and Zhang and Wamsley (2019), have researched similar variables without combining them, whilst some have investigated different associations, but it seems to be a lack of studies specifically researching the association between sexual satisfaction and sexual dreams. Furthermore none, to the extent of my knowledge, seem to include a Scandinavian sample. Hence why, future research should incorporate these specific variables, but also include different variables that might affect the relationship, such as sexual frequency, recent life events as well as factors like depression and anxiety. These are factors previously associated with the main variables (Carcedo et al., 2020; Hmidan & Weaver, 2019; Smith et al., 2011; Yu & Fu, 2011).

As previously mentioned, the field of dreams lacks a proper defining and reliable biomarker, and many questions remain unanswered for the time being (Zhang & Wamsley, 2019). Our study does however contribute by adding additional data to the growing pool of information. As this information keeps enlarging it will make the different associations clearer, which then again might lead to a better understanding of both the phenomenon of sexual dreams and how they might be connected to different aspects such as physical and mental illness. Additionally, it might also lead to a better understanding of whether sexual dreams function as compensatory mechanisms, an extension of what one experiences in

daytime, both, or neither. Though some studies have sought to find whether the hypotheses brought forward in this project holds relevance or not, the literature is not overflowing with thoughts and data supporting either one of them. Further research should therefore keep the momentum going by continuing investigating the associations and the field in its entirety.

In the research yet to be conducted, one should use a similar design as presented in this study, though with some changes as previously discussed. By utilizing a longitudinal design, the effects and frequencies within it will become more precise compared to designs where the participants only participate in one or few assessments. Its duration makes it possible to examine how the association between sexual satisfaction and sexual dreams develop over time, and it is especially useful for providing in-depth understanding in small groups (Huisman & Tight, 2019). With the introduction of other related variables, one also opens up the possibility to investigate how they all affect each other. The design also seems to be more suitable for examining the targeted variables in this study, thus the recommendations for further use.

In future research, another factor one should consider is the sample size. In the discussion it was mentioned that sample size is crucial for the power and significance of the study, hence why its importance should be mentioned. By recruiting a suitable sized sample, one will be better fitted for avoiding both Type I- and Type II-errors (Verma & Verma, 2020). Also, as our findings indicated that relationship status was somewhat correlated with sexual satisfaction, this should be further looked in to at a later stage. There might be multiple reasons as to why these are correlated, e.g., more frequent partnered sexual acts such as formerly discussed, which is why future projects should include an increased amount of items focusing on detecting the different mediating variables.

Lastly, as previously mentioned, the majority of our sample is located or raised in Scandinavia, an area in which has not been included in previous studies regarding the same matter. Though our study gives somewhat an insight in the dream experiences within this region, it is necessary to recruit more and larger samples in future studies for one to be able to investigate this in further detail. This is to enable a better understanding of the Scandinavian population's dream habits and levels of sexual satisfaction as well as how these might be in relation to each other and how they compare to other regions and cultures.

Conclusion

The main aim of this study was to assess the association between the subjective feeling of sexual satisfaction and the frequency of sexual dreams. The results lacked

significant effects on the main topic but contributed with significant positive correlations between relationship status and sexual satisfaction, supporting previous research. Though these results showed non-significant correlations with lack of effect size between sexual dreams and sexual satisfaction, as well as between sexual dreams and relationship status, they were compared to the existing literature and further assessed as they would both provide additional support and imply contradicting evidence. No significant group difference on the frequency of sexual dreams was found between two groups scoring high and low on sexual satisfaction. The non-significant effect however, showed a small but higher score for the group scoring high on sexual satisfaction, in line with both hypotheses. Age, gender, relationship status, and sexual satisfaction did not seem to predict the variance in sexual dreams, but the results were not significant. The discussed results seemed to mainly add further support to both hypotheses, the continuity hypothesis and the compensatory aspects of dreaming, but did show contradicting results in some areas. It should be noted that as most results lack significance, they should be assessed with caution, however, it does seem clear that an association is present. Further research should include the same type of longitudinal design with some mentioned improvements. As the literature is slim, more research should be conducted within the field, with larger samples, preferably northern as they seem to be non-existing. This will cause a better understanding of sexual satisfaction and sexual dreams, as well as the association between them, possibly contributing to more positive outcomes in both well-being, sexuality, and psychopathology.

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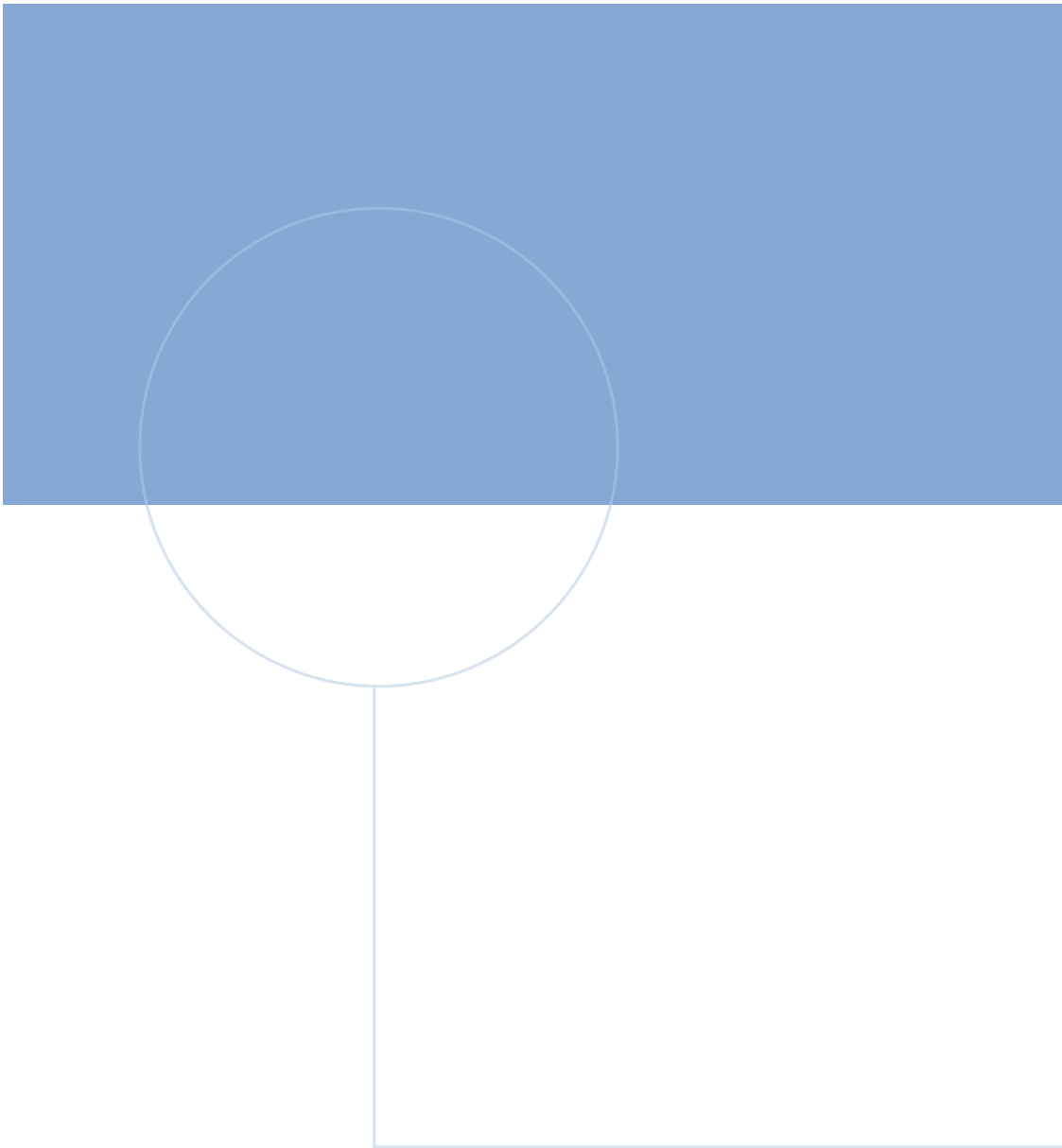

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