

Sleep positions of couples at sleep onset: A questionnaire study

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Summary. How and with whom we spend the night has changed over time; in modern times it is common for couples to share beds. Although research has shown that co-sleeping affects sleep architecture, the relationship between the couples' waking lives and their nightly behavior has rarely been studied in detail. The present study investigated 90 participants with stable relationships regarding their sleep-onset position while sharing the bed with their partner and relationship characteristics like satisfaction and duration via questionnaire. Spooning was the most common sleep-onset position. A small but non-significant correlation between the intimacy of the couples' position at sleep onset and overall relationship quality was found; however relationship duration was associated with less intimate sleep onset positions. Future studies should elicit the include questions about the couples' sleep rhythm, possible co-sleeping of children, and the presence of sleep disorders.

Keywords: Sleep position, couples' sleep, relationship quality

1. Introduction

How and with whom we spend the night has changed over time (Klösch, Dittami, & Zeitlhofer, 2009). The brief historical review here follows the book of Klösch et al. (2009). In ancient Egypt wealthy people slept in the first beds and it was clear from the bed sizes that men and women could not share them. In ancient Greece and Rome the people first started to establish extra rooms for sleeping. Back then, a group of men would share one bed room and women would share a separate one. The "lectus genitalis" (lat. marriage bed) was meant only for the simple people and the poor. In early medieval times (830 A.D.) husbands and wives were still expected to share a bed only for the purpose of reproduction. It is difficult to set a date at which men and women in the West started sharing a bed (Ekirch, 2005). Premarital couples were allowed to share a bed without engaging in intercourse in preindustrial times (Ekirch, 2005). To be more precise – it consisted in so-called "bundling" rooted in the European countryside in the late eighteenth century. Although there are documented cases like Duncan McCurriein 1721 who went to court because he shared a bed with Isobel Midy and declared that "there are many others who lay together as they did", it is difficult to say when exactly bundling began. Ekirch (2005) has illustrative pictures from 1558 and 1530 showing men and women sharing a bed and describes incidents in which wives in 1737 complained about the sleeping behaviour of their husbands.

In their review article, Troxel, Robles, Hall, and Buysse (2007) showed that co-sleeping impacts the objective sleep

parameters, e.g., increased number of body movements during sleep (Pankhurst & Horne, 1994), and reduced sleep quality in women (Dittami et al., 2007). Especially if a sleep disorder like sleep apnea syndrome is present in one partner, the sleep of the bedpartner is often disturbed (Blumen et al., 2012). An actigraphy study (Spiegelhalder et al., 2015) reported better subjective sleep quality in young couples sharing the bed compared to sleeping alone. Despite possible impairments of the sleep architecture, most couples want to share bed as this sharing is linked to feelings of safety and intimacy (Rosenblatt, 2006).

In addition to sharing the bed, the sleep positions might be related to the quality of the couple's relationship, e.g., an intimate sleep position might reflect an intense relationship. Dunkell (1977) described a woman whose sleeping behaviour embodied her feelings towards her husband: In the beginning of their marriage she found herself kissing and hugging her husband in her sleep and as time went by conflicts emerged within their relationship that led to the woman literally kicking her husband out of the bed. El-Sheikh, Kelly, Koss, and Rauer (2015) found that if men used constructive conflict or negotiation before bedtime, both partners' sleep duration and the men's sleep efficiency were increased. If there was a destructive conflict between the partners, however, the sleeping situation worsened. Klösch et al. (2009) reviewing Dunkell's (1977) cases and theories put forward the hypothesis that intense body contact while sleeping is related to high relationship intimacy. However, there is no empirical evidence for this hypothesis published so far.

The aim of the present study was to test whether the intimacy of the couples' positions at sleep onset positively related to relationship quality. In addition, it was tested whether the duration of the relationship has an impact on the sleep-onset position, i.e., less intimate the couples' positions would be at sleep onset with longer relationship durations.

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Submitted for publication: August 2016

Accepted for publication: October 2016

2. Method

2.1. Participants

The sample used in this study consisted of 90 students at the University Mannheim, Germany. The mean age was 21.28 (SD = 2.75) years and ranged from 19 to 31 years (N = 88). 77 of the participants were female, 13 male and all of them were in a relationship at the time of the study. Of the 89 participants who stated their marital status 85 were unmarried and 4 were married. 66 of the 90 students studied psychology, 19 German studies, 1 social science, 1 cultural science, 1 “Berufsakademie” (BA), 1 Magister und 1 was not stated. All of the 90 participants completed a self-developed questionnaire regarding the position they fall asleep in with their partner. In addition 60 of the participants filled out a questionnaire regarding their relationship itself (Partnerschaftsfragebogen, PFB). This sub-sample consisted of 52 female and 8 male psychology students. The mean age was 21.62 years (SD 2.99) and ranged from 19 to 31. 58 of the participants were unmarried, and 2 were married. There were thus no differences between the two samples regarding these variables.

2.2. Measurement Instruments

Two questionnaires were used in this study. A self-developed questionnaire capturing the position they preferred to fall asleep in – in bed with their partner (Sleep position questionnaire, see Appendix). The second was a standardized questionnaire regarding the relationship itself (Partnerschaftsfragebogen, PFB).

The sleep position questionnaire consisted of 11 items (the translated questionnaire can be found in the appendix) that include questions concerning the ages and sexes of the participants as well as questions about their relationships, e.g., the length of the relationship and the frequency of sleeping together. Six illustrations (see Tables 2 and 3) were presented to capture the position the couple preferred to fall asleep in, i.e., the most frequent one. In addition, the participants estimated the percentage of falling asleep in this preferred position. The authors ranked the six positions in terms of intimacy from 1 = not intimate to 5 = very intimate. The same level of intimacy within the ranking was assigned to the positions c and d (see Appendix).

In case none of the illustrations matched the most frequent position, there was an option to describe the position in words as completely as possible. In addition to the most frequent sleep onset position, the participants were asked to provide the percentage of all other sleep positions. We created an additional variable by averaging the percentages the participants provided for each sleep position position separately, i.e., obtaining the mean percentage of every sleeping position within the sample.

The standardized relationship questionnaire by Hahlweg (1996) assesses the quality of the relationship and consists of 31 items in total. There are 10 items for each sub scale “Fighting behaviour” (S), “Tenderness” (Z) and “common unity/communication” (GK) and one for the happiness of the relationship in general. The questionnaire used 4-step Likert scales to evaluate the frequency of each behaviour and which ranged from 0 = never or very seldom to 3 = very often and the relationship-happiness item was a 6-point Likert scale from 0 = very unhappy to 5 = very happy. The total score for each subscale was calculated by adding the

scores of the 10 items per subscale (range 0-30). The sum of these three subscale scores formed the overall score for the whole questionnaire (PFBG, range 0-90).

Item 5 “Before falling asleep we snuggle up to each other” was used by us to verify the intimacy stated with the position chosen in the sleep position questionnaire. The internal consistencies were very good (S = 0.93, Z = 0.91, PFBG = 0.95) and good (KG = 0.88). The re-test reliability was tested with 50 people after 6 months and resulted in S; r = 0.68, Z; r = 0.74 and GK; r = 0.83. The construct validity was determined by intercorrelations between the PFB and other questionnaires regarding relationship quality (Hahlweg, 1996).

2.3. Procedure

Information regarding the study “Couple’s positions at sleep onset” was introduced to eligible participants just before various lectures the students attended. The single inclusion criterion for participation was to be in a relationship at the time of the study. The participants were asked to fill them out by themselves and not to talk to others about the study. There was no time restriction for the answering and the participants were asked to answer as spontaneously as possible. After approximately ten minutes the questionnaires were collected. The statistical analysis procedures were carried out with SAS 9.4 and Spearman Rank correlations were used.

3. Results






The average length of the relationships was 21.39 months (SD = 19.83), ranging from 0.13 to 123.0 months. 72 (80%) participants did not and 18 (20%) did live together with their partner. Of those 18 participants 11 lived in their own flat, 3 lived with roommates, 2 lived with one of their parents and 2 in some other situation. The frequencies of seeing each other and spending the night together are shown in Table 1.

Table 2 shows the rank order of the most frequent positions. The percentage indicates how many participants stated that the corresponding position was the most frequent one. On average, the couples started 69.96 ± 15.80% of all nights together in their preferred sleep-onset position. Table 3 shows the frequency in percentage of every sleeping position within the sample. This time the percentages are averages of all participants that spend X% of their shared sleep-onset in the respective position. Table 4 shows the mean and standard deviation of the total PFB score, the subscales and the single items “Before falling asleep we

Table 1. Frequencies of seeing each other and spending the night together/sleeping in the same bed together (N = 90)

Variable	Frequency seeing each other	Frequency sleeping in the same bed
Daily	23.33%	16.67%
Five to six times a week	15.56%	6.67%
Three to four times a week	21.11%	22.22%
Once or twice a week	20.00%	30.00%
Less than once a week	20.00%	24.44%

Table 2. Percent of participants reporting this sleep-onset position as their most frequent position (N = 90)

Ranked Position	Frequency	Ranks
	3.33%	1
	22.22%	2
	44.44%	3
	22.22%	4
	3.33%	5

snuggle up to each other” and “Happiness relationship”.

To test the first hypothesis, we used a Spearman Rank correlation between the total score for the PFB and the ranked positions (age, gender and the percentage participants spend in their preferred position were partialled out, i.e., statistically controlled for the possible effect of these variables). The result of the one-tailed analysis was not significant: $r = .103, p = .2238 (N = 60)$. The Spearman Rank correlation between the duration of the relationship and the ranked position, again partialling out the influences of age, gender and percentage participants spend in their preferred position, was significant: $r = -.18, p = .0455, \text{one-tailed}, N = 88$.

Table 3. Distribution of every sleeping position within the sample (N = 80 participants completing all items)







Position	Frequency	Ranks
	20.56 ± 28.72%	1
	4.19 ± 12.89%	2
	31.05 ± 30.51%	3
	12.19 ± 20.33%	3
	21.86 ± 26.78%	4
	9.71 ± 22.93%	5

Table 4. Means (M) and standard deviations (SD) of the total PFB score, the subscales and the single items “Before falling asleep we snuggle up to each other” and “Happiness of the relationship” (N = 60)

Variable	M ± SD
Fighting behavior (S)	6.63 ± 4.82
Tenderness (Z)	24.72 ± 3.09
Common unity/Communication (GK)	22.47 ± 3.51
PFB total score	70.55 ± 7.95
Item 31 “Happiness of the relationship”	4.10 ± 1.00
Item 5 “Before falling asleep we snuggle up to each other”	2.78 ± 0.49

In addition to the testing of the hypotheses, several exploratory analyses were performed. The Spearman Rank correlation between the percentage spent in position b, which was the most intimate and the subscale “Tenderness” (Z) of the PFB was $r = .317, p = .0163, N = 57$. The percentage of position e, which also was one of the most intimate positions, correlated significantly with the total PFB score: $r = .323, p = .0143, N = 57$. The percentage of position f, which was the least intimate, correlated negatively but not significantly with the total PFB score: $r = -.247, p = .0639, N = 57$. Furthermore there was a positive correlation between Item 5 (“Before falling asleep we snuggle up to each other”) and the ranked position: $r = .444, p = .0004, N = 60$. Lastly, we found a link between the percentage spent in position f and age: $r = .242, p = .0316, N = 79$ and the frequency the participants spend the night with their partners and the percentage with which they fall asleep in the most frequent position: $r = .211, p = .046, N = 90$.

4. Discussion

The present findings showed a small but non-significant correlation between the intimacy of the couples’ position at sleep onset and overall relationship quality, but long relationship duration was associated with less intimate sleep onset positions. These findings might correspond with the results of Gunn, Buysse, Hasler, Begley, and Troxel (2015), who found that the higher the perceived relationship quality of the wife, the higher the sleep concordance and presumably more intimate sleeping positions.

The link between how often the participants spend the night with their partner and how often they fall asleep in their preferred position might be explained as follows. The more often two people spend the night together, the more frequent (the preferred) position becomes as the couple get used to this particular position. The other explorative correlation between the percentage spent in the least intimate position f and the age of the participant should be interpreted with caution as the present sample’s age range was very small and, thus, should be tested with a more extensive sample.

From a methodological viewpoint, several limitations of this pilot study have to be mentioned. For this study we assumed that the partners go to bed at the same time, because otherwise the partners could not find a position to fall asleep

in together. This might not be the case every night the couple sleeps together, even though the correlation of bed times is quite high in young couples (Spiegelhalder et al., 2015). Future questionnaires should elicit whether respective how often the partners start their bed time together. Another issue might be the effect of the social desirability. It is possible that people who assume their relationship to be a good one and who have a high relationship satisfaction tend to state that they sleep in very intimate positions with their partner. I.e., future studies should control for social desirability. Even though it is unknown how the sleep environment affects the sleep positions of couples, it would be interesting to use objective measures of sleep positions (De Koninck, Lorrain, & Gagnon, 1992). Focusing on the sleep position of each partner, Lorrain and De Koninck (1998) found no relationship between sleep position and sleep stages but they did not analyze the closeness of the bed partners. Another approach to increase validity of the subjective measures is to include the data of the bed partner independently. This would also allow to obtain estimates how comfortable the sleep-onset positions are and whether the couples subjectively observed a relationship between sleep-onset positions and sleep quality. The most obvious limitation of this study is the selectiveness of the sample. The participants are young students with relatively short relationship durations and, thus, the findings of the present study cannot be generalized. This pilot study should be complemented with surveys of samples with broader age ranges. In this context, other factors like bed size (small bed might not allow to sleep apart from each other) and the presence of children in the room or in the bed should be assessed.

The positive correlation between Item 5 ("Before falling asleep we snuggle up to each other") of the PFB and the ranked positions are a validation of the 5-point picture scale used in the present study. Furthermore, only one participant described another sleep position not included in the six images (Male lying on the back, female lying on the side). Studies in larger samples might reveal a larger variability in sleep onset positions. Another important factor that could affect pair sleep is the presence of sleeping disorders, e.g., insomnia, sleep-related breathing disorders as some couples decide to sleep in different rooms. This should be elicited in samples with a larger age range.

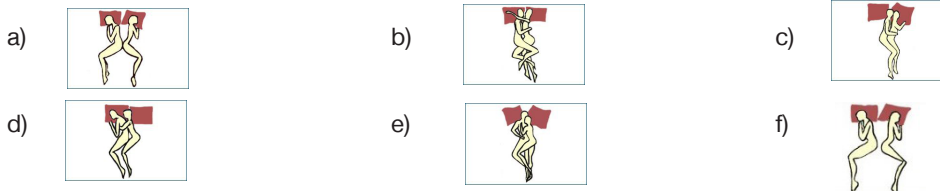
To summarize, the present pilot study indicated that there might be links between sleep onset positions and relationship variables like duration of the relationship. As the correlations were relatively small, larger samples are needed to corroborate the present findings. Future studies should include questions about the couples' sleep rhythm, possible co-sleeping of children, and the presence of sleep disorders.

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Appendix: Sleep position questionnaire

1. How old are you?
2. You are male female
3. You are unmarried married
4. Course of studies ____ Semesters
5. How long are you and your partner in a relationship already?
6. Do you live together?
7. During the semester; How often do you and your partner meet on average per week?
8. During the semester; How many nights to you and your partner spend together on average per week?
9. Which of the following illustrations matches the most common/frequent position (at sleep onset) in your relationship?



g) other position (Please describe the position): _____

10. How often do you fall asleep in this – the most frequent – position? (Please state in percent)
 _____ %

11. Which of the illustrations occur in addition (please rank the positions with the matching percentage)?

- | | | | | | | | | |
|----|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---|----|
| 1. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |
| 2. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |
| 3. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |
| 4. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |
| 5. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |