Influence of chronotype on sleep and use of portable media devices of adolescents

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Introduction:

Every year more portable media devices (PMD) conquer space in children's rooms and are also in use before bedtime. Excessive evening use of PMDs influence the sleep-wake rhythm and sleep quality of adolescents.
The causal relationship between the use of PMDs and social media at bedtime or after lights off, as well as the emergence of sleep deprivation and increased risk of sleep disorders have already been addressed in numerous studies.
Chronotypes and age may also play an important role in sleep regulation and influence evening usage of portable media devices.

Conclusions:

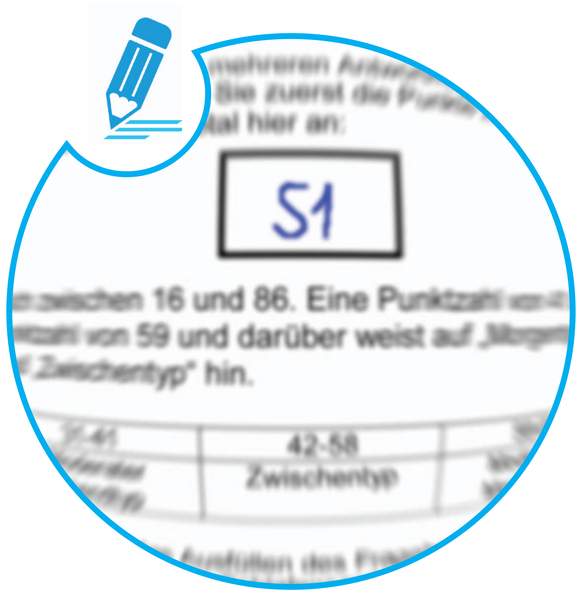
Results show, that chronotypes and age may play an important role in the frequency and duration of PMD usage.

Especially in evening chronotypes, limiting the time spent with PMDs before bedtime may have positive effects on their sleep duration and sleep quality.

PMD usage (min.)

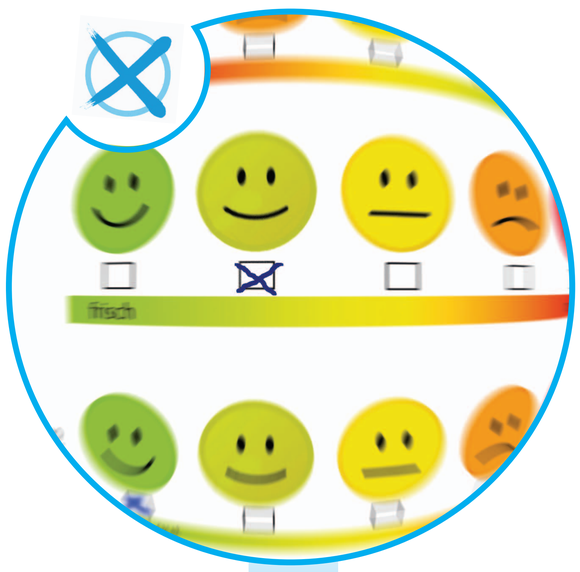
Chronotype	Mean	SD	Median	n
evening	339.12	183.65	330.00	141
intermediate	261.25	142.12	240.00	284
morning	165.23	53.03	160.00	13
Age	**Mean**	**SD**	**Median**	**n**
14	189.93	117.75	180.00	143
15	314.60	182.53	240.00	91
16	335.14	146.87	330.00	204
Gender	**Mean**	**SD**	**Median**	**n**
female	298.59	173.36	300.00	270
male	259.16	133.68	240.00	168
Min.	151.28	(14 year, morning chronotyp)		
Max.	422.53	(15 year, evening chronotyp)		

Methods & Materials:



Chronotypes were assessed by the Morningness-Eveningness questionnaire by Home and Oestberg (1976), which allows the definition of five chronotypes: strong/moderately evening types, intermediate chronotype and strong/moderately morning types.

Daily sleep log (evening and morning protocol) provided information about sleep quality, sleep timing, mood and affectivity as well as the time of PMD usage. The design of the diary has been adapted to adolescents to ensure usability (max 5 min.) and comprehensiveness.



RESULTS:

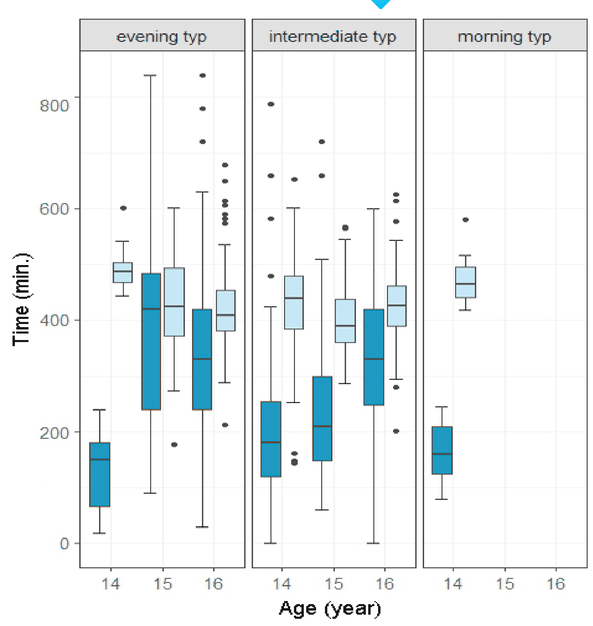


Figure 1: Distribution of daily PMD Usage and sleeptime in minutes classified by chronotypes and age of students.

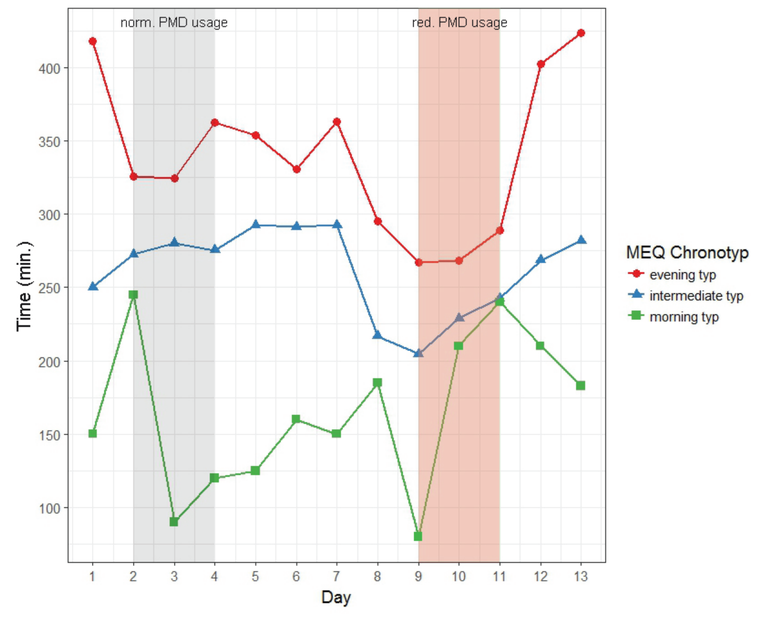


Figure 2: Diary duration of PMD usage. Comparison over the entire measurement period, highlighted in grey and bright red.

Thirty-five Austrian adolescents aged 14-16 (mean age: 15.15 years, SD= 0.919, 21 females) were monitored consecutively for 14 days (n= 476 nights, NA= 15).
In the sample, only three chronotypes were present: moderately pronounced evening type, intermediate chronotype and moderately pronounced morning type (only present in the group of 14-year-old subjects).

Trend of PMD usage increases with age while sleep duration tends to decrease. PMD usage was found to be longest in 15-year-old students classified as evening chronotype (422.53 min).

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Sleep quality remained unchanged over the whole test period with a slight improvement towards the end of the test period. Mood and affectivity did not show any significant changes.

Acknowledgments:
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Photo & Design: A. Stefanic