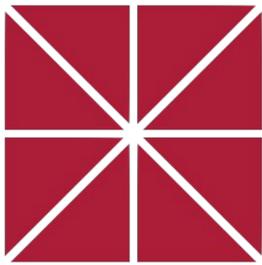Spring 5-7-2021

Using Health Data to Provide Better Emotional Assistance to Children with ADHD

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Introduction

• Children with ADHD tend to have inattentive and hyperactive or impulsive behaviors that often require the support from caregivers and treatments such as medication or behavioral interventions.

• Various smart watch applications have been used to support children and adults with intellectual disabilities.

• The use of health data in supporting children with ADHD through smart watches is not well studied.

• We are assessing heart rate as a stress marker in children with ADHD to determine the appropriate time and type of assistance to provide for the child.

Hypothesis

• Periods of higher heart rate will correspond to events of higher stress.

Methods

Participants
• Data has been collected from 12 children with ADHD over the course of 6 months.

Data Collection
• Data was collected and extracted through the Health app on Apple smart watches worn by the participants.
• Participants recorded their daily activities in a journal

Statistical Analysis
• Perform Student t-test to determine significance of differences in heart rate between events.

Results

Stat	Overall	Sleep	Morning	Evening
mean	90.23	76.15	94.05	96.68
std	23.29	15.10	24.41	22.63
max	208	190	208	203
min	29	41	29	29
count	32946	8709	12850	11387

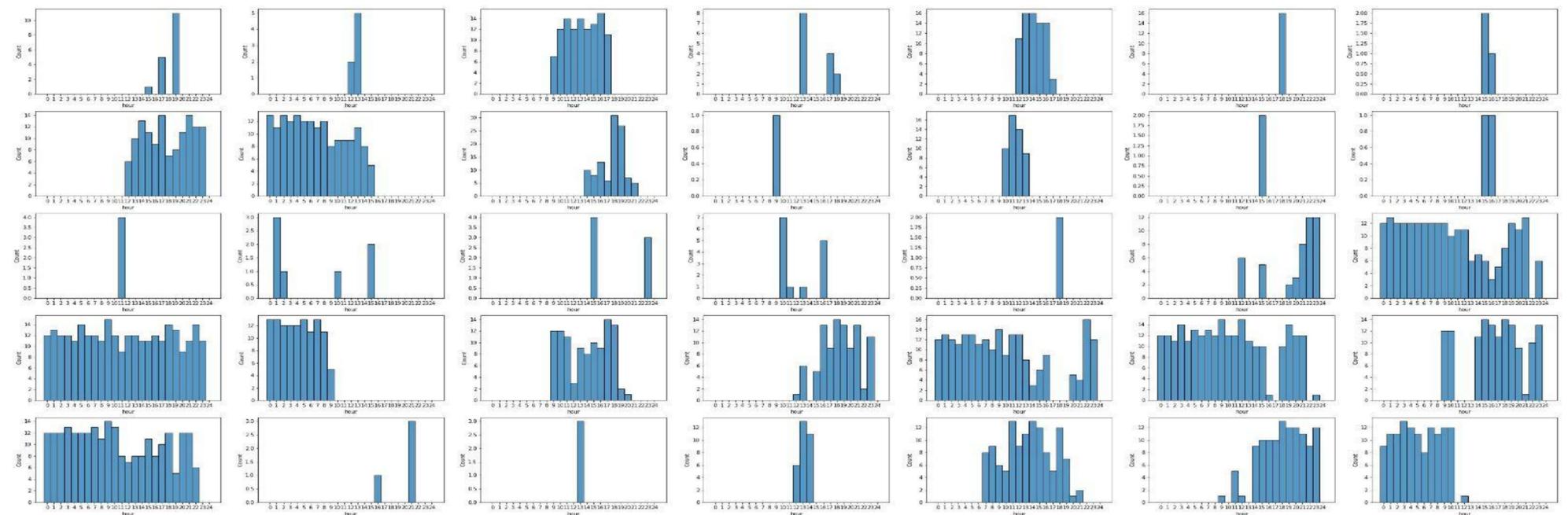Table 1: Statistics summarizing heart rate data from children with ADHD

Figure 1: Histogram of heart rate data per day for one user

Conclusions

• No conclusions can be made yet from these early stages of the analysis.

• We need to compare our results to results in current scientific literature if it exists.

• More heart rate data is required for our analysis to be more accurate.

• We must determine the source of the inconsistent data collection. It may stem from user error or errors in the smart watch device.

• We need a daily journal of the participants to know exactly when the stressful events occurred.

References

American Psychiatric Association. 2013. Diagnostic and Statistical Manual of Mental Disorders (DSM- 5®). https://doi.org/10.1176/appi.books.9780890425596.7 44053

Cook S, Stauffer J-C,Goy J-J,etal. Heart rate never lies: interventional cardiologist and Braude's quote revised.OpenHeart2016;3:e000373.doi:10.1136/openhrt-2015-000373

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