Choosing connection: Neural and Behavioral Insights into Adolescent and Emerging Adult Social Decisions

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SCAN ME

1. BACKGROUND

Despite the number of daily decisions that require choices about how we spend social time, there is limited knowledge about **how adolescents make simple decisions about social time allocation**.

Duration of time *(allocation problem)*

Time is a finite & rivalrous resource.
- Economics
- Opportunity costs
- Time allocation
- Behavioral ecology

Interaction size *(selection problem)*

Number of people has no strict upper bound
- Social network theory
- Coalition formation
- Audience effects
- Social complexity

Objective: *Characterize behaviors and neural mechanisms used to make decisions about how to spend social time.*

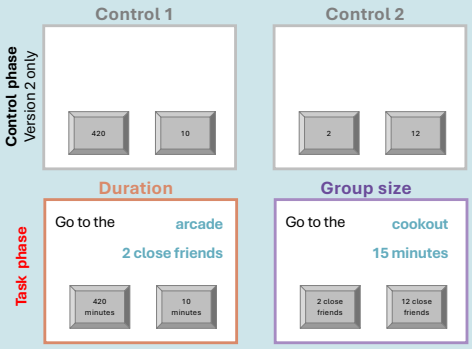
2. METHODS

N = 149, 99 teens & 15 adults

	T1 N	T2 N	Age M (SD)	White & non-Latine
Adults: 18-23 years (V1)	15	0	20.4 (1.2)	86%
Youth: 12-18 years (V1)	39	0	14.2 (1.4)	66%
Youth: 12-18 years (V2)	60	35	14.9 (1.6)	58.9%

T1= first study visit; T2 = follow up visit (12+ months). Age reported at T1

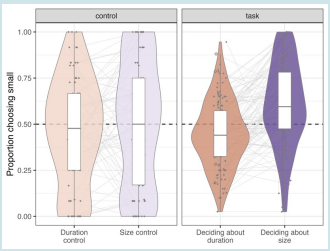
"Fortune Teller" EEG task



"Fortune Teller" EEG Task : Participants were told to make decisions and Mystie the Owl would read their fortune. During the task phase, an activity was set (750 ms), a constraint was set (750 ms), and then two options appeared (3750 ms). Version 2 added control condition block prior to any constraints being introduced. Participants received one of 5 "Fortunes" that corresponded to their behavioral decisions across 80 trials.

3. RESULTS

Both teens and adults prefer smaller social groups.



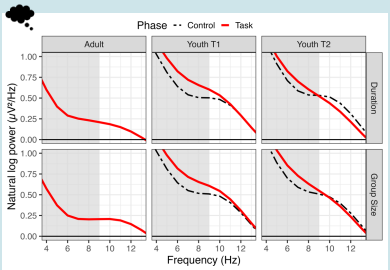
Model results: Condition, $\chi2(1)=270.73$, p<.001; Phase × condition, $\chi2(1)=2.83$,p=.093

Mostly swans & few sloths w/ heterogeneous strategies in both teens & adults.

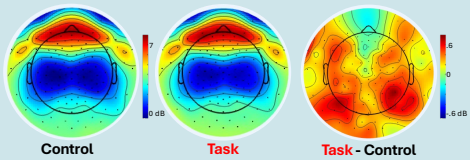
↑ Group Size ↑ Duration	↑ Group Size ↓ Duration	↓ Group Size ↓ Duration	↓ Group Size ↑ Duration
27% adults 28% teens	7% adults 7% teens	33% adults 25% teens	33% adults 33% teens

Chameleon: 7% of teens (0 adults) chose equally across all conditions, indicating balanced choices.

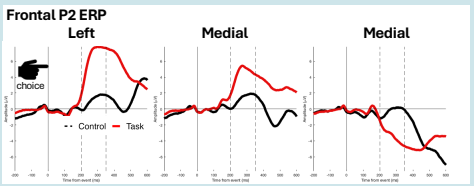
When thinking: Greater posterior theta power w/ social constraint.



Model results: Phase × frequency, F(1,29)=5.18, p<.0001. Task > Control from 1-9 Hz, p < .032, FDR-corrected. No difference between condition (Duration vs. Group Size).

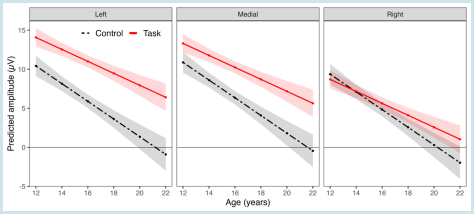


When choosing: Increased frontal P2 amplitude and latency w/ social constraint



Model results: hemisphere x condition, $F(1,52449)=94.1$, p < .0001

Task effects increase with age



Model results: age x condition, $F(1,52449)=18.1$, p < .0001

KEY TAKEAWAYS

Strategies are mixed but meaningful. There are three dominant strategies and context should be considered.

Implications for increased ↑ posterior theta, potentially aligned with right-lateralized association network.

Age sharpens frontal P2 sensitivity to social context, consistent with maturational tuning of socially contextualized decision making.