

Introduction

Puberty brings on many changes in different aspects of life. Your exposure to societal norms, your access to the world and your partaking in risky behavior all increase. Biologically, there is a surge in dopaminergic activity seemingly increasing reward seeking. This creates an age pattern across riskiness, risk-taking, and risk-assessment. Riskiness is defined as “a situation involving exposure to danger”. Risk assessment is “the identification of potential hazards”. Risk-taking is the participation in taking risks.

The general population would expect the pubertal process to differ greatly for boys and girls. Looking at two different age groups, there is the expectation of an increase in the strength of the correlations between tasks (BART, SLT) with one another and with reports of risk-taking and risk-assessment (SSS, BRT, BIS, BRA) based on an increase in exposure to risk as one ages. Furthermore, looking at the gendered groups, an observational difference is expected in reports of risk-taking and risk-assessment.

Research Questions:

1. Is there a gendered difference in these measures of risk perception and risk behavior?
2. Is there an age difference in these measures of risk perception and risk behavior?
3. How do the task-based and questionnaire-based measures correlate with one another?

Methods

Existing public data from the Parenting Across Cultures (PAC) study was used. The PAC study is very diverse including populations from 9 different countries. In the PAC study, riskiness is evaluated using different tasks and questionnaires. The variables consisted Balloon Analogue Risk Task (BART), Stoplight game task (SLT), Sensation Seeking Score (SSS), Barratt Impulsivity score (BIS), the Benthin Risk Assessment score (BRA) and the Benthin Risk Taking (BRT) score. Scores from each variable were correlated within themselves and one another.

These assessments accounted for cultural variabilities and were administered in the primary language of each site. The Stoplight Game task (SLT; Steinberg et al. 2008)¹ is a computerized behavioral measure of risk-taking tendencies. In the Stoplight Task, participants were asked to drive a car through 20 different intersections and encouraged to get to their destination as fast as possible. The yellow light was used as an assessment of risk. Time would be added to your total drive if the vehicle crashes after failing to stop at a red light. The Balloon Analogue Risk Task (BART; Lejuez et al. 2002)² is a computerized task where participants are asked to inflate a balloon as far as possible without it popping. If the balloon pops, no points are awarded. More points acquired mean more risk-taking.

The Benthin Risk Perception scale (BRA/BRT; Benthin et al., 1993)³ measured whether or not a participant had participated in risky behavior and how risky they found that behavior to be. It also assesses the perception of risk in a given situation through participants reporting if they felt the benefits outweighed the risk. The more risk perception/assessment, the less the participation in risk is expected to be. The Barratt Impulsivity test (BIS; Patton et al., 1995)⁴ utilized a four point scale to measure impulsivity amongst participants. The Sensation Seeking Scale (SSS; Zuckerman et al., 1978)⁵ evaluated the experience seeking, adventure seeking, disinhibition, and boredom susceptibility.

Using RStudio, a correlation matrix was constructed. Participants were grouped by age called “Age 10” (average age 10.65 yo) and “Age 14” (average age 14.51 yo) in all trials. T-tests were used to test the significance between individual variables of each age group. To evaluate a possible third variable, participant scores were grouped by gender. T-tests were run to test the significance between individual variables of each gender group. P-values were evaluated.

Results

Figure 1: Age 10 Correlation Matrix

6 variable scores (BART, SLT, SSS, BRT, BIS, BRA) were correlated with one another. Data set comes from Wave 3 participants aged 10 years old on average.

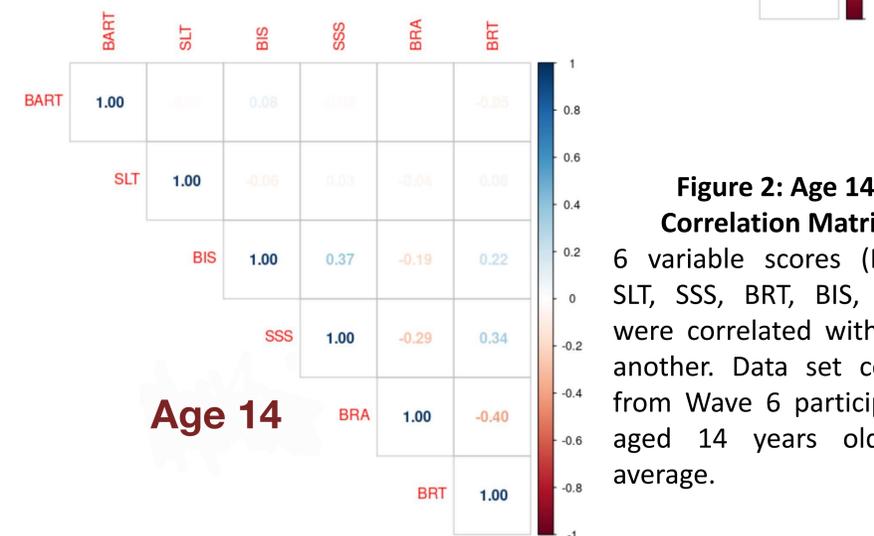
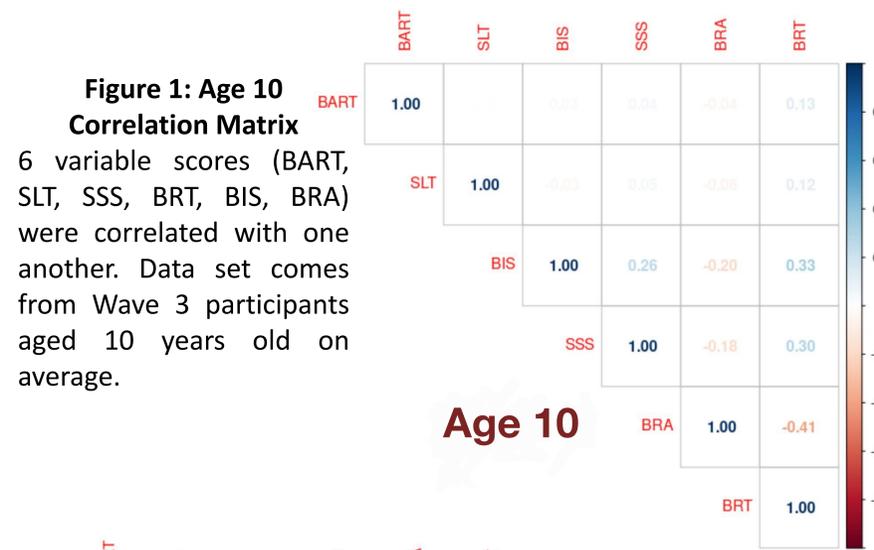


Figure 2: Age 14 Correlation Matrix

6 variable scores (BART, SLT, SSS, BRT, BIS, BRA) were correlated with one another. Data set comes from Wave 6 participants aged 14 years old on average.

T-test P-values of Tasks Comparing Age and Gender

	Age	Girls	Boys	
BART	3.32E-09	6.47E-16	3.32E-09	
SLT	0.296	0.6702	0.296	
BIS	0.1473	0.01488	0.1473	P > 0.05
SSS	0.4855	0.001416	0.4855	P < 0.05
BRA	2.50E-10	1.10E-05	2.50E-10	
BRT	1.54E-12	6.55E-13	1.54E-12	

Figure 3: T-test P-values of Tasks Comparing Age and Gender

The significance of the difference in means of each task were calculated. The task scores were broken into age groups (testing the difference between age 10 and age 14) and gender (was there a significant difference in scores within groups of girls and boys).

Discussion + Next Steps

The correlations were significant and moderate. There is no change in the pattern of correlations. This indicates some consistency amongst the age groups. The variables are independent of one another.

Although no strong correlations were found within the tasks and questionnaire methods, there was significant differences between certain tasks across each variable. The BART task and the Benthin questionnaires showed significant differences (Figure 3). The BIS and the SSS had significant differences within age for the girls. The PAC study is diverse and decreases the likelihood of bias. The lack of correlation within the tasks raises the question: should these tasks continue to be used in psychology as a basis for risk-assessment if there is no correlation within these tasks?

Next steps:

- Evaluate other factors that may be impacting the scores such as nationality
- Evaluate the use of these questionnaires in psychology

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