

EUROCRIM 2025 - ATHENS

3 - 6 SEPTEMBER 2025

Exploring the Link Between Heart Rate, Community and Parenting Styles in Reactive and Proactive Aggression in a Portuguese Sample

Supported by FCT - UIDB/00443/2025 (Interdisciplinary Research Centre on Justice)

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Project funded by FCT PhD Scholarship - [2023.02492.BD](#)



INTRODUCTION



This research is part of my PhD project, now in its last year, examining how social, individual, and physiological factors influence reactive and proactive aggression. Unlike most studies that focus on a single factor, this project explores how these influences interact, and how they explain this types of behaviors. This presentation focuses on community adversity, parenting styles, and heart rate (resting and variability), and their links to reactive and proactive aggression

MAIN GOAL



To understand the extent to which heart rate, parental styles, and community factors, taken individual or together, help explain aggression, considering different forms of assessment (self-report vs. behavioral tasks).

RESEARCH DESIGN

Quantitative Survey (n= 407)

Complete a self-report questionnaire:

- Reactive–Proactive Aggression Questionnaire (RPQ);
- Parental Styles and Dimensions Questionnaire (PSDQ);
- Peer Delinquency Scale (PDS);
- Community Experiences Questionnaire (CEQ);
- BIS/BAS Scales;
- Some items from ISDR;

Experimental Approach (n=61)

1. Physiological measurement (e.g., HR & EDA)

2. Participation in 3 experimental tasks:

- R/P_TAP – Reactive and Proactive Taylor Aggression Paradigm (*reactive and proactive aggression*)
- BART – Balloon Analogue Risk Task (*sensation seeking*)
- TNBRT – Taylor Novel Bell Ring Task (*fearlessness*)

WHAT WE EXPECT?



1

Physiological factors (rHR, HRV), parenting styles, and community adversities would jointly contribute to explain different types of aggression.

2

We expected that reduced physiological regulation, reflected in lower heart rate, and low HR variability (SDNN), would be linked to higher reactive and proactive aggression.

3

Parenting styles and community adversities would have an additional effect, reinforcing or buffering the link between physiology and aggression.

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DATA ANALYSIS

SAMPLE

MAIN STUDY:

M = 407

69,8% - Female Participants

30,2% - Male Participants

Mean age: 22,6

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EXPERIMENTAL STUDY:

M = 61

70,5% - Female Participants

29,5% - Male Participants

Mean age: 24,6

CORRELATIONS

Main findings:

- **Proactive Aggression (self-reported)**: associated with direct victimization (.271*), lower resting HR (-.396**), and TAP proactive aggression (.390*).
- **Reactive Aggression (self-reported)**: associated with authoritarian parenting (mother) (.396**) and direct victimization (.384**).
- **Proactive Aggression (task-based)**: associated with lower resting HR (-.265*), lower mean HR during TAP (-.374**), and lower HRV (SDNN) during TAP (-.253*).
- **Reactive Aggression (task-based)**: associated with lower mean HR during TAP (-.300**).

Both physiological, parental, and community factors are linked to aggression, but the associations differ depending on whether aggression is reactive vs. proactive and self-reported or behavioral.

REGRESSION

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	PROACTIVE AGGRESSION self-reported	REACTIVE AGGRESSION self-reported	PROACTIVE AGGRESSION Behavioral Task	REACTIVE AGGRESSION Behavioral Task
Authoritarian PS - father	-	-	-	-
Authoritarian PS - mother	-	.022 (.107)	-	-
Direct Vitimization	.021 (.244)	.026 (.318)	-	-
Indirect victimization	-	-	-	-
HR - mean during task	.	-	.025 (-.025)	.024 (-.026)
SDNN (HRv) - during task	.	-	.048 (-.003)	-
rHR	.016 (-.065)	-	-	-
R ²	25,4%	31,6%	24,3%	18%
<i>p-value</i>	.023	.004	.031	.139

- **Proactive Aggression (self-reported):** explained by direct victimization and lower resting HR ($R^2 = 25.4\%$, $p = .023$).
- **Reactive Aggression (self-reported):** explained by authoritarian parenting (mother) and direct victimization ($R^2 = 31.6\%$, $p = .004$).
- **Proactive Aggression (task-based):** explained by lower HR mean and lower HRV (SDNN) during task ($R^2 = 24.3\%$, $p = .031$).
- **Reactive Aggression (task-based):** no significant predictors (model ns, $R^2 = 18\%$, $p = .139$).
- Self-report aggression linked mainly to parenting and community victimization, but also with resting heart rate.
- Behavioral aggression linked mainly to physiological measures.

Different measure methods tap into different processes.

WHAT WE FOUND?



1

Low HR and HRV during task predicted behavioral proactive aggression. Similarly, behavioral reactive aggression was explained by low HR - during the task.

2

Authoritarian PS and community victimization explained self-reported reactive aggression, and proactive aggression was explained by mothers' authoritarian parenting style and rHR.

3

Self-report vs. behavioral assessments emphasize different, but complementary, predictors of aggressive behavior.

4

Potential moderation by parental styles and community factors were explored, but interaction terms were not significant.

CONCLUSIONS



- ✓ **No significant biosocial interactions** were observed between physiological and social factors.
- ✓ **Predictors of aggression varied depending on the type of measurement:**
- ✓ **Self-reported aggression:** more influenced by **social and contextual factors** (e.g., parenting style, community victimization).
- ✓ **Behavioral aggression:** more **sensitive to physiological regulation** (e.g., resting heart rate).
- ✓ **Different assessment methods** capture **distinct** but complementary predictors of aggressive behavior, highlighting the importance of both social and biological contributions.

WHAT WE SHOULD DO NEXT?



- Use a **larger experimental sample**;
- Test the influence of **EDA** (*currently ongoing*).
- Include **additional social and individual factors** (e.g., delinquency, peer influence, sensation seeking, inhibition and activation system).
- Explore **other interaction models** to examine potential biosocial effects.

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THANK YOU

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