

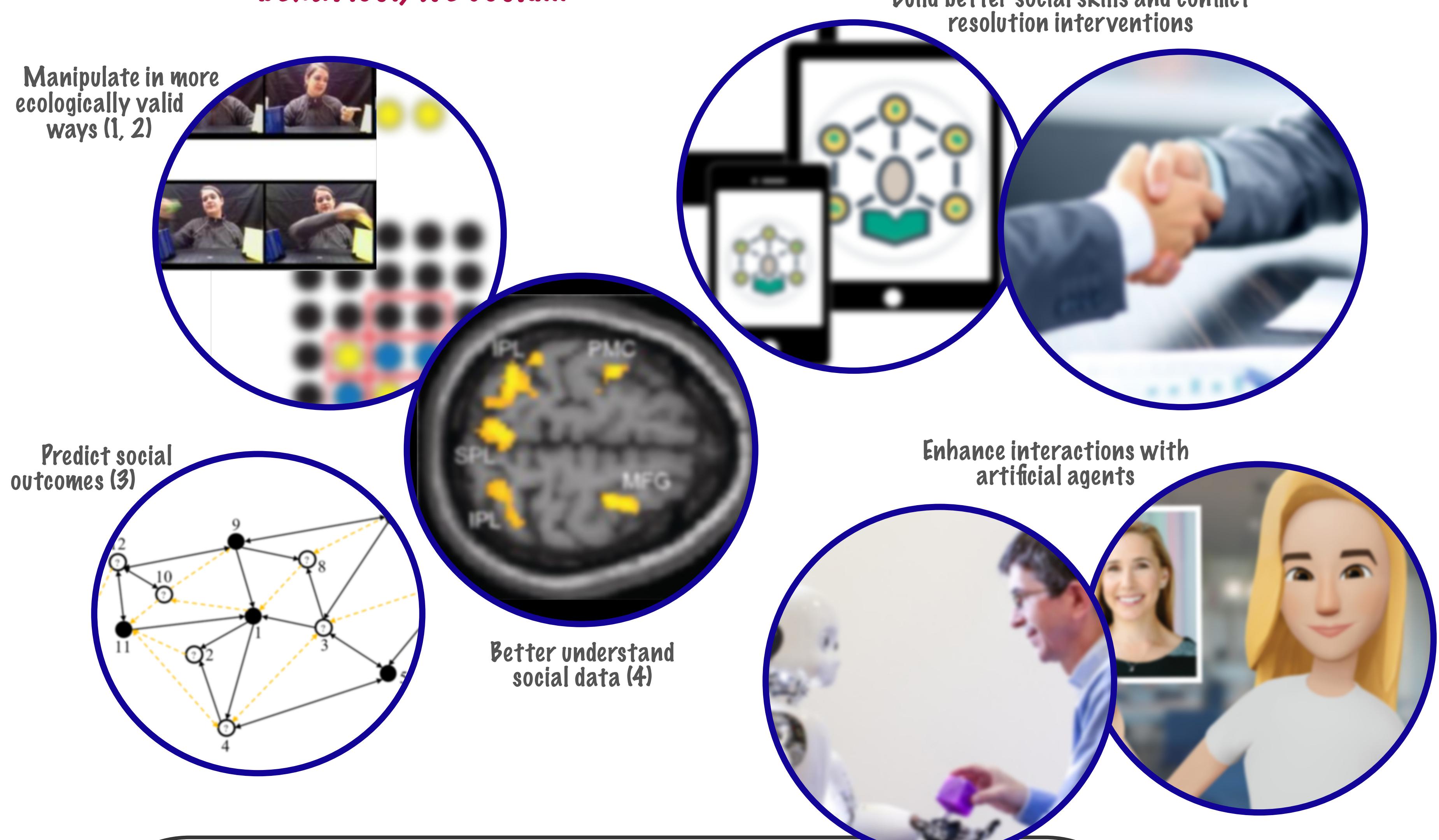
How Interactions Unfold: Pattern Detection in Natural Social Behaviour

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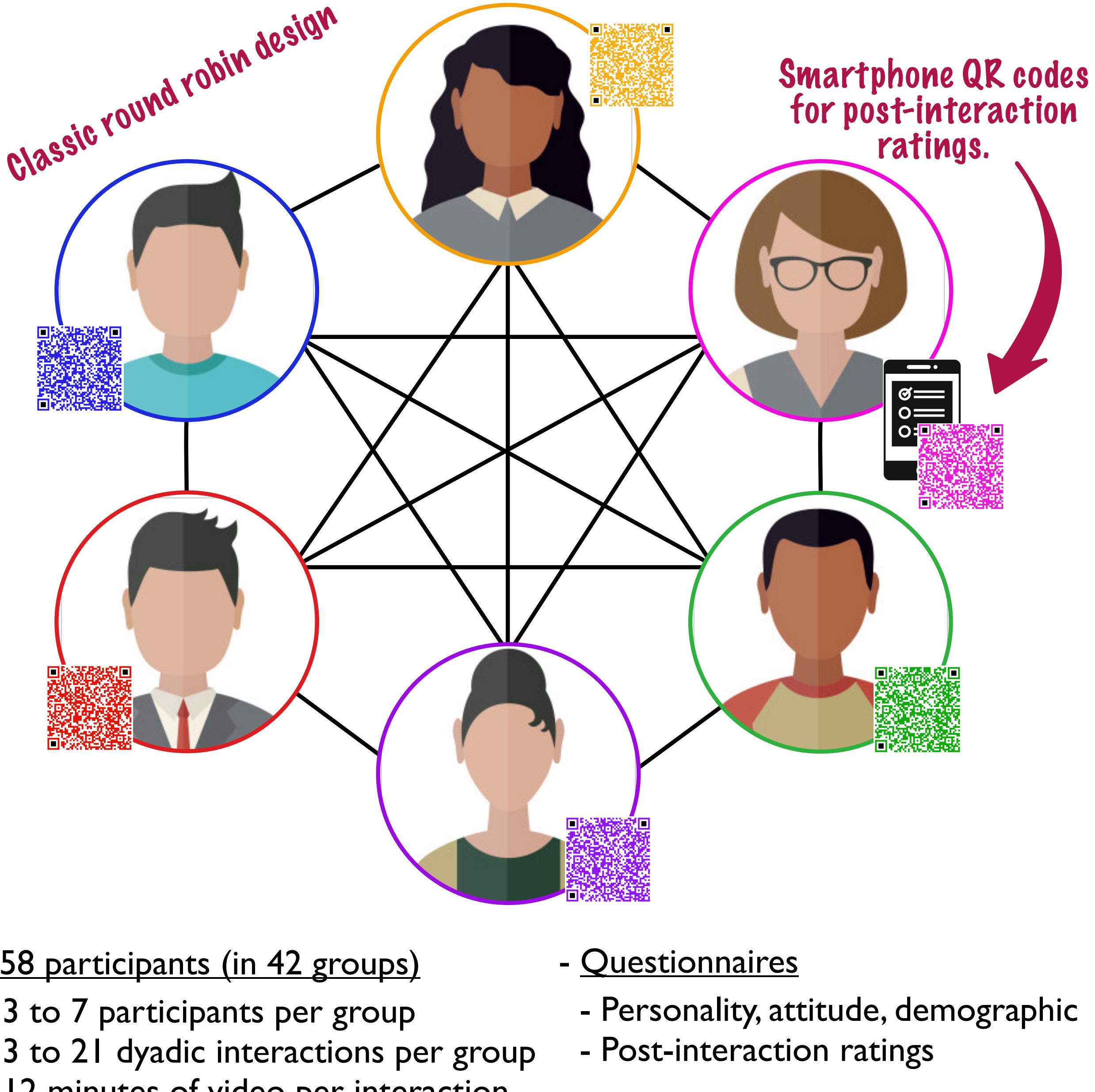


If we knew more about natural social behaviour, we could...



Challenge I: Big Data

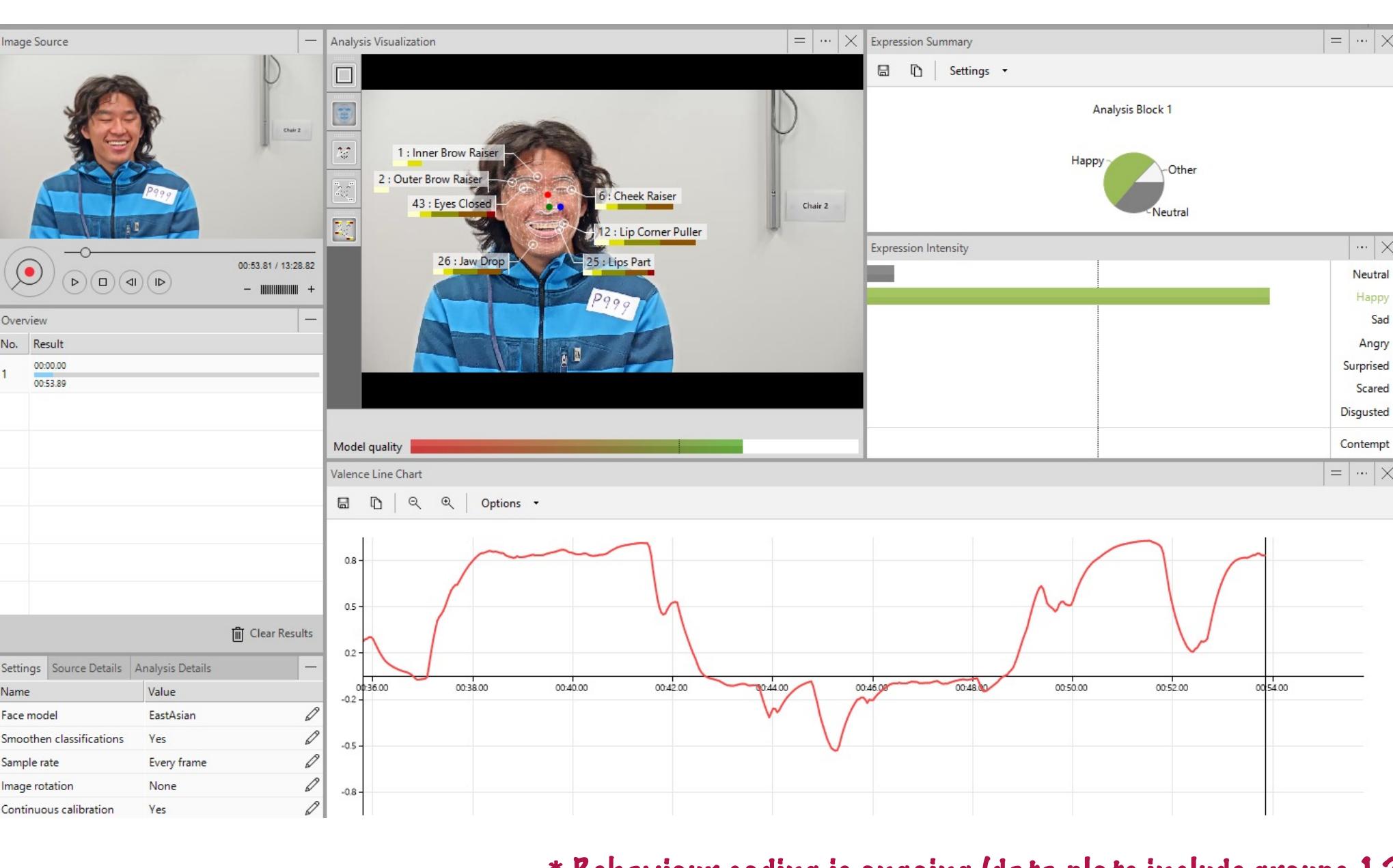
If you want to study naturalistic social behaviour, you need to collect a lot of it.



Challenge II: Face Coding

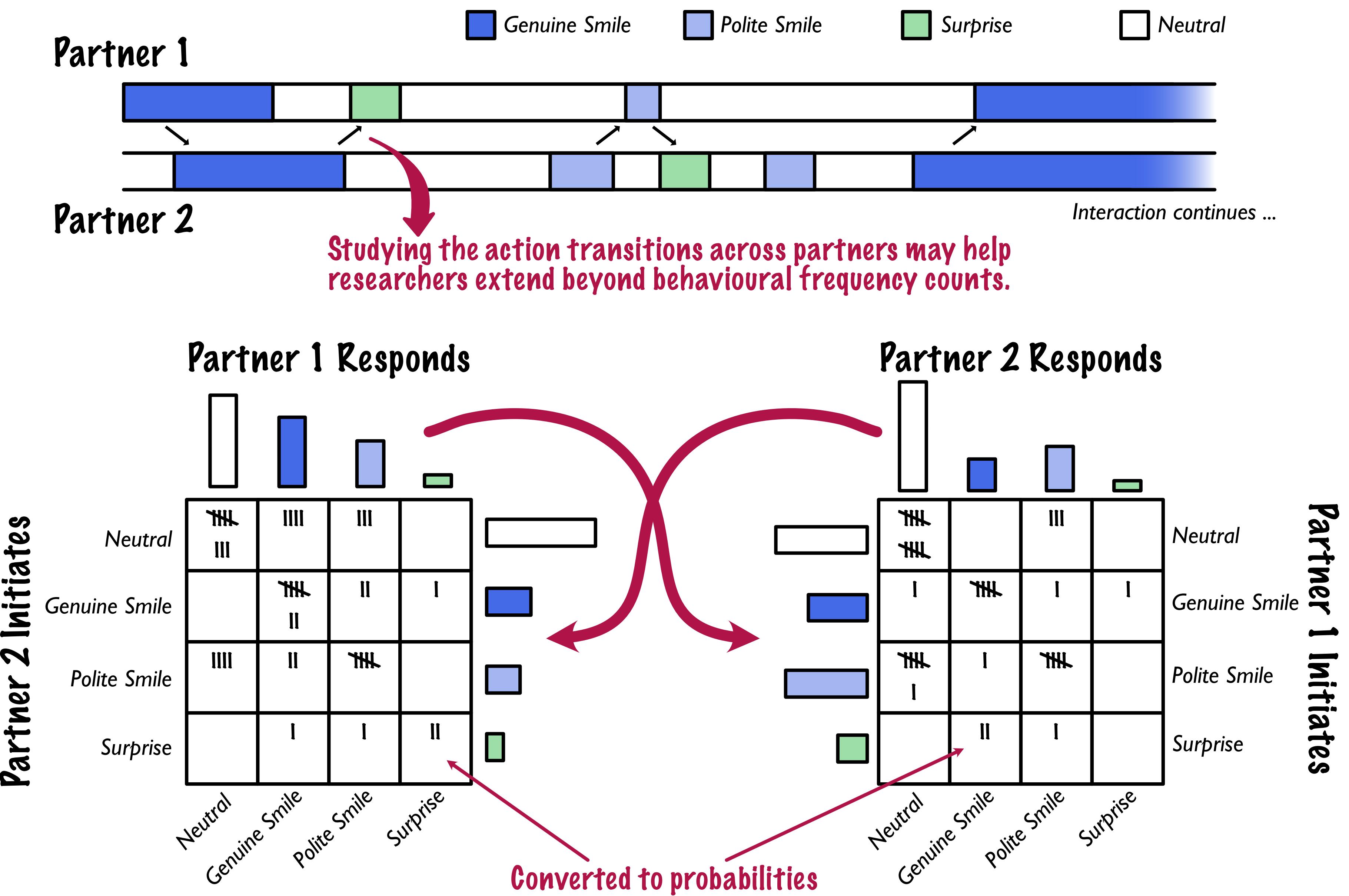
Behavioural coding is expensive and labour intensive.*

- We used Noldus FaceReader 9.1 (www.noldus.com)
- Automatically codes action units + composite expressions
- Exported at 15 frames per second (~67ms per frame)



Challenge III: Pattern Detection in Unique Interactions

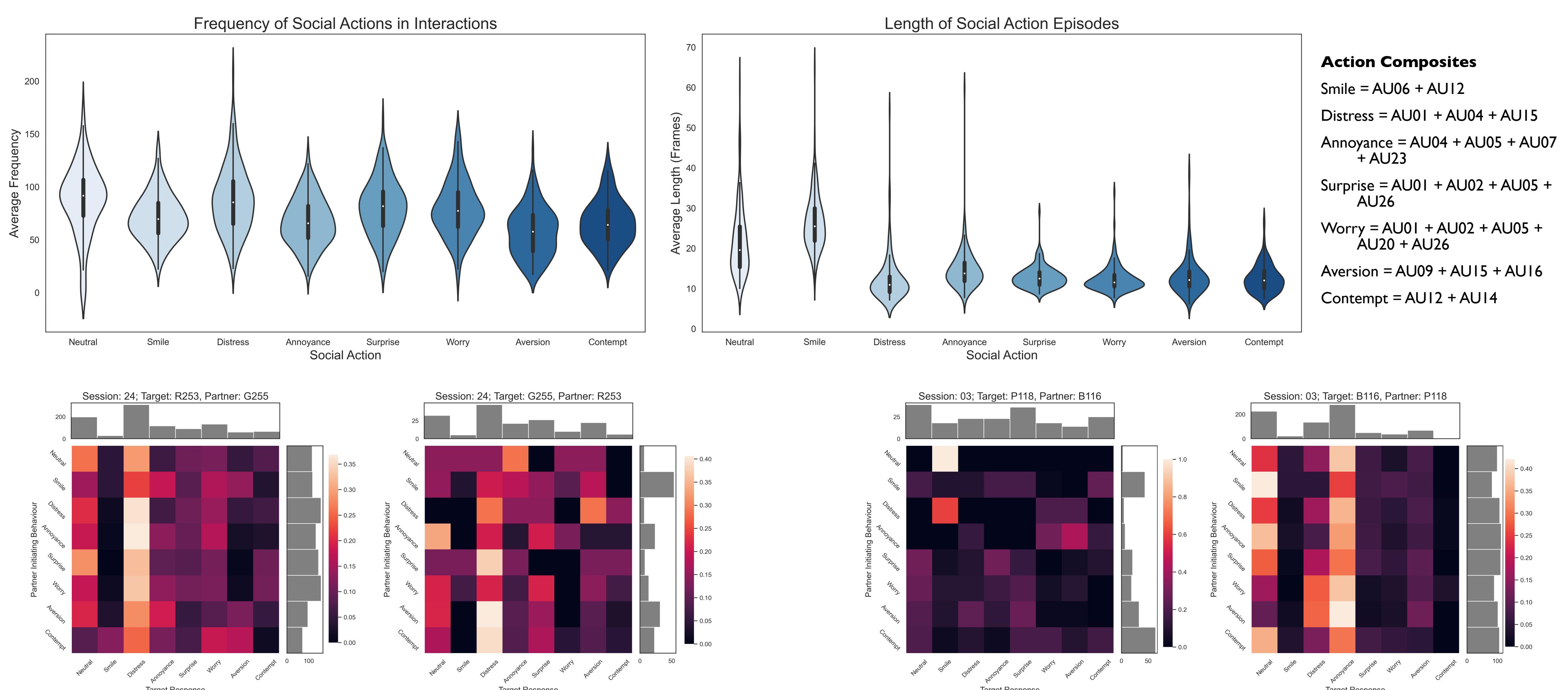
Patterns are difficult to detect because interactions unfold over time and in a variable way.



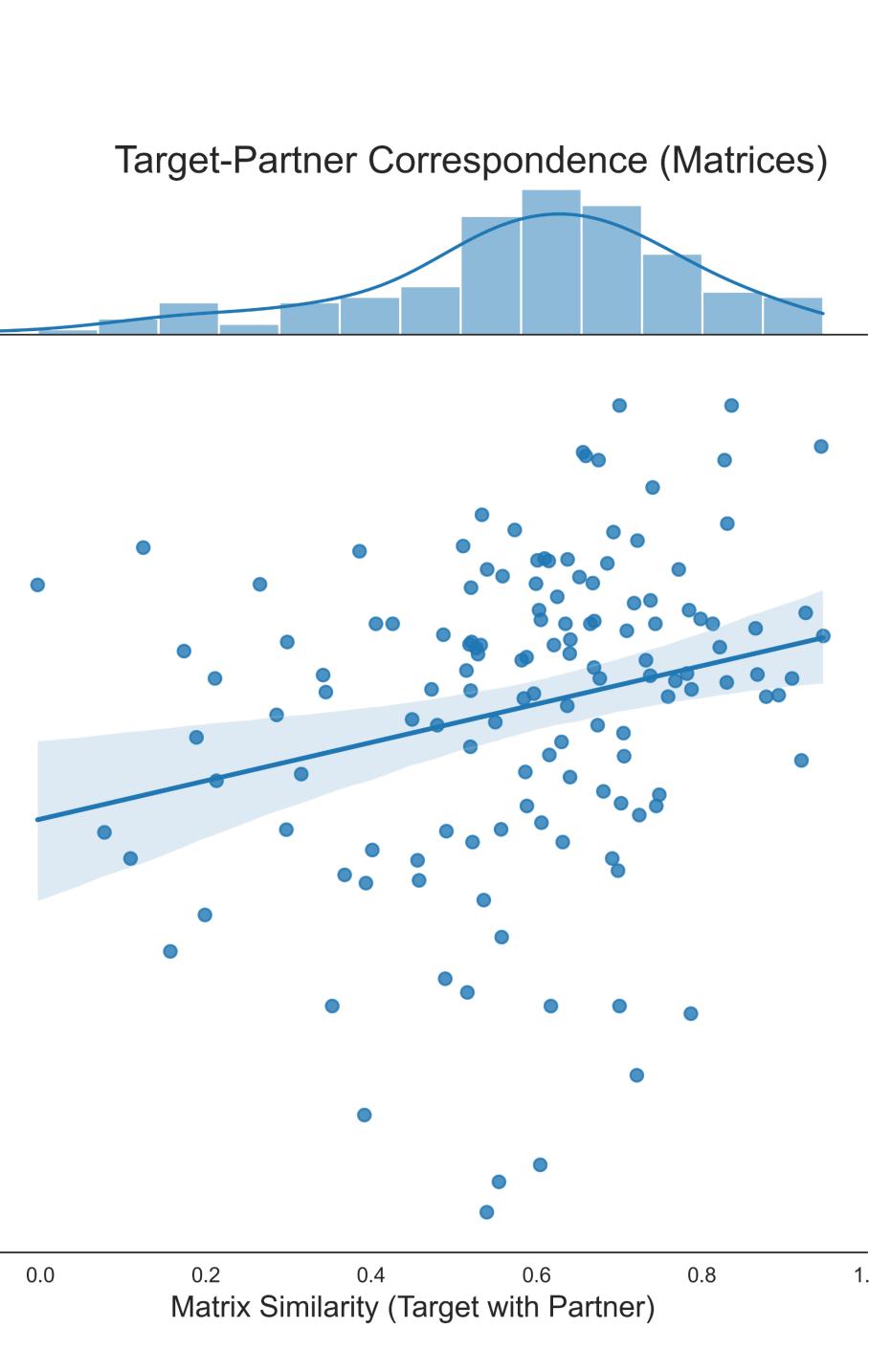
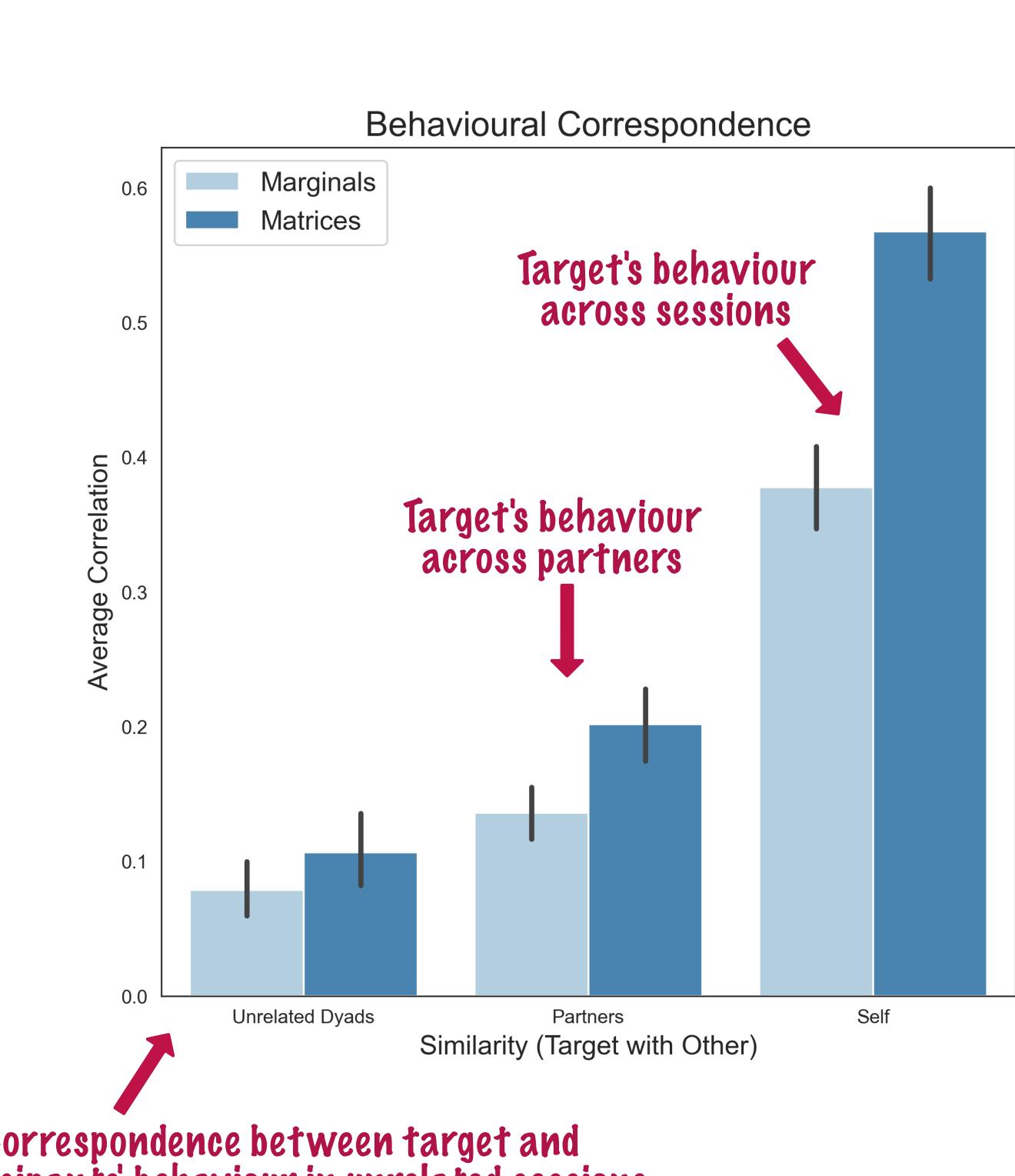
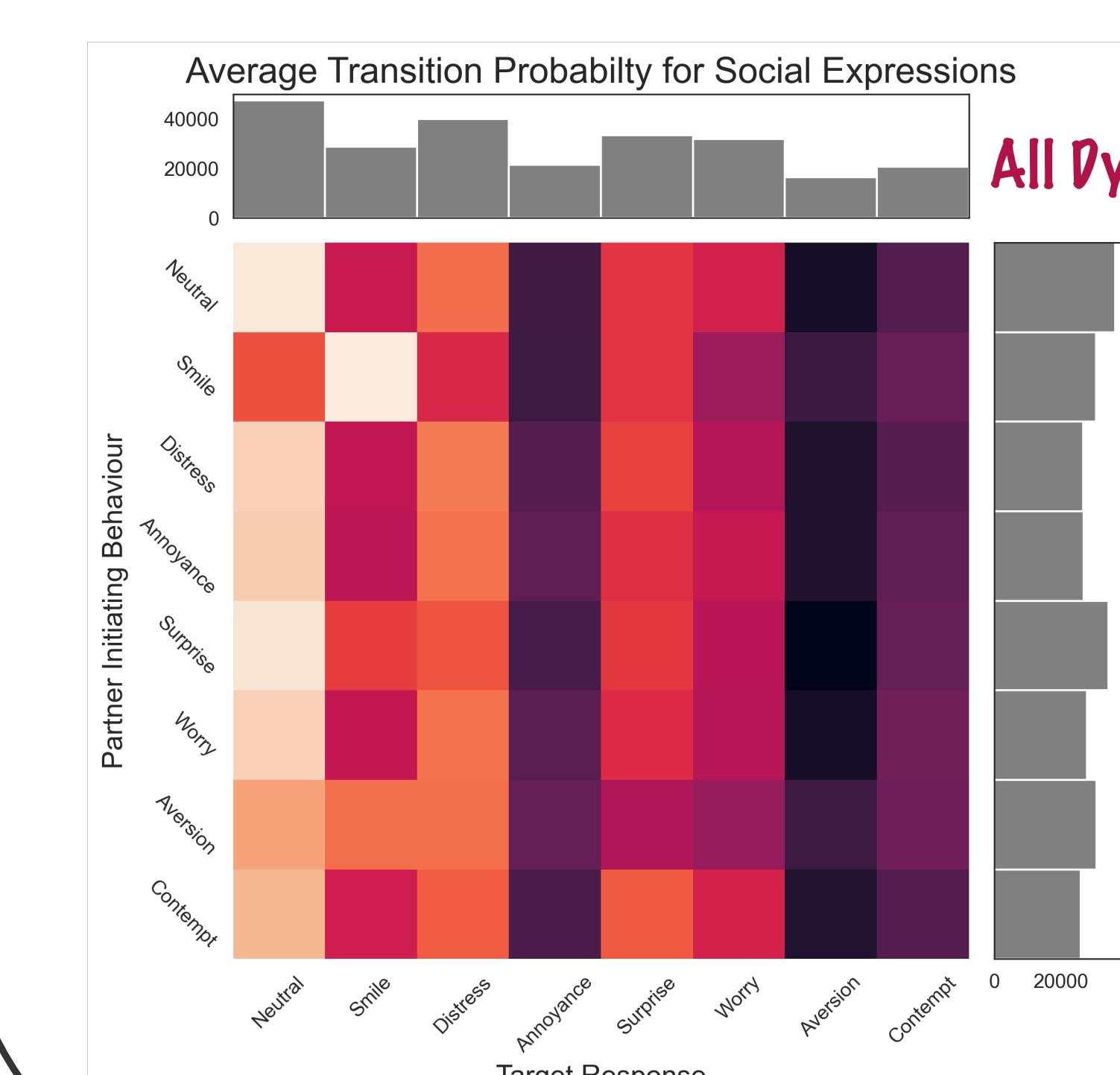
Innovation

Examining transition probabilities breaks the dependence on time.

- A target's behaviour becomes 'conditionally independent' of time
- It depends only on the partner's previous action
- Allows patterns of social exchange to emerge



Example of good social coordination ($r = .49$)



1 Reday, et al., 2010. Neuroimage. doi: 10.1016/j.neuroimage.2010.01.052

2 Šplíšková, et al., 2019. SCAN. doi: 10.1093/scan/nsz004

3 Molokwu, et al., 2020. Computational Science. doi: 10.1007/978-3-030-50433-5_15

4 Schilbach, et al., 2011. SCAN. doi: 10.1093/scan/nsq067

