Towards an Affective Model of Norm Emergence and Adaptation

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Abstract

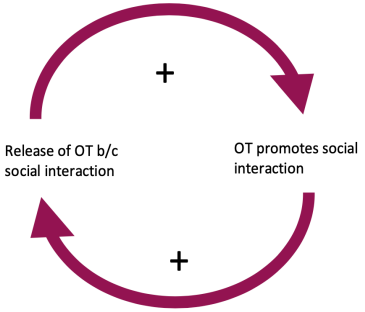
Norms help govern a group's behaviour as well as important group level traits like cooperation and culture. Despite its importance, little research has been done into the affective basis of norms and normative cognition. Here we outline an emerging research program, towards an affective model of norm emergence and adaptation, and discuss its relevance to other approaches to norms investigated in the HRI community.

Affect & Norms

- Affect, particularly emotions: Evolved social adaptations that help maintain norms and group living [1]
- These include anger, guilt, disgust, or shame
- Hormonal modulation a mechanism that underlies emotions.
- Bridges physiology and cognition (bottom-up)
- Oxytocin chosen due to its role in pro-sociality group psychology [2]

Oxytocin (OT) Features Included In Model

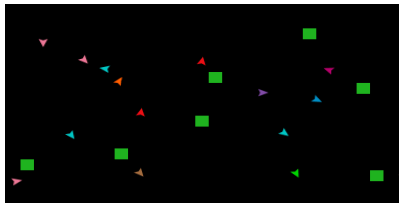
1. Context dependent modulation of social salience (for in-group)
2. OT release induces conformity of norms
3. Feedback loop (entailing emergent phenomena)



Experiments

Question: will the group dependent effects of oxytocin increase group stability and viability in an environment with scare resources?

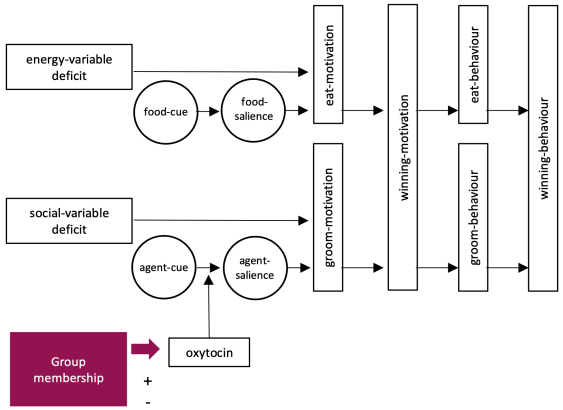
- *Experiments will take place in a simulated environment in with patches of food (squares).*
- *Each agent will be assigned a coloured tag which will be representation of norm and group membership.*
- OT modulates tags to become more similar after successful social contact.



Screenshot from NetLogo simulation

Agent Control Architecture

Motivation architecturre internal needs and external cues [3,4]



$$motivation\ intensity = variable\ deficit + (variable\ deficit * agent\ salience)$$

$$agent\ salience = agent\ cue * (1 + OT)$$

Conditions

1. Egalitarian: OT will increase social salience of for all agents regardless of group membership
2. In-group centric: OT will increase social salience of agents only with the same tag (i.e. increased salience for just the in-group)
3. Control: no salience effect when OT is released.

Extensions

- Adding a food sharing moral dilemma
- Replace tags with culturally patterned behaviours/practices
- Incorporate more complex affectual mechanisms i.e. anxiety [4]

Expected contributions

- Better understanding of affect on norm dynamics will in designing artificial affect for robots which interact with norms in stressfull environments
- OT can act as frugal form of social memory
- Ready built-in knowledge in evolved mechanisms can complement and shorten training of other methods such as reinforcement learning

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References

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