# Literature Review – Complex Contagion

## Jia et al. 2017 - Asymmetric goal contagion: Social power attenuates goal contagion among strangers

* Goal contagion is a type of social influence – important for hierarchies as social power is a core part of group hierarchy
* People develop goals (such as environmental concern) in a social context; they are particularly influenced by the goals of others who belong to the same ingroup
* Adopting goals from others from the ingroup is a way to attain desired social bonding; this can occur quite spontaneous leading to a complex contagion (or flow) of goals in social groups
* People in high power positions perceive their position to be secure; this makes them less susceptible to influence (on goals) by their inferiors or to use threatening information when developing strategies; they (can) judge by themselves
* Laurin et al. 2016 (cited by the article) found an asymmetric flow of power in relationships; but even strangers follow this behaviour when acting in groups
* **Found that goal contagion is an important mechanism leading to groups circulating around leaders goals** – this increases group cohesion and reinforces the groups power structure
* People with a high perspective usually react to high hierarchy individuals first
* Goal contagion is very important for social functioning and group cohesion, social binding through goals is more effective than binding through certain behaviour, for example it makes the group more flexible

## Laurin et al. 2016 - Power and the pursuit of a partner's goals

* Goals flow asymmetrically from high to low power individuals in partnerships

## Liang et al. 2013 - **Opinion dynamics in networks with heterogeneous confidence and influence**

* **Check for what a power law distribution is**
* Found optimum heterogeneity for a network to maximize consensus time

## **Wang et al. 2018 - Social contagions with heterogeneous credibility**

* Type pf phase transition depends on correlation between nodes credibility and degrees lead to

## Wang et al. 2019 - Measuring the hierarchical influence in social contagions and the emergence of crossover phase transitions

**Has loads of useful references to other articles – very good literature review**

**Complex mathematical model**

* Researched heterogenous influence strength – some individuals called opinion leaders/innovators have much more strength on influencing others – **influence strength is a crucial element when researching social contagion**
  + Opinion leaders have higher credibility and are better informed
  + Researched ratio between influence of opinion leaders and masses – at 1 homogenous
* Influence of the internet is weakening the influence of mass media making opinion leader stronger in influencing opinion
* Edge based compartmental theory – introduce spreading threshold model
  + Use cumulative influence – i.e. enough neighbours have to try to convince them and once the threshold is reached they will get convinced
  + Individuals recover and then do not spread information anymore
  + Individuals only try to influence each neighbour once (I think)
* Order of influence: Opinion leaders – susceptible individuals – masses – other susceptible individuals - other opinion leaders -> start of a domino effect
* Found first order, second order, and hybrid transitions
* Crossover phase transition changes from first to second order with high influence of the masses; with low mass influence the crossover phase transition changes from first order to second order and hybrid
* Higher heterogeneity is not always increasing spread

## Wang et al. 2016 - **Dynamics of social contagions with heterogeneous adoption thresholds: Crossover phenomena in phase transition**

* **Check for Markovian spreading threshold model**

## Watts 2002 - A simple model of global cascades on random networks

* With a threshold model adoption first grows continuously and then decreases discontinuously

## Other good articles on initial seeding, threshold sizes, topology structures:

Singh et al. 2013 - Threshold-limited spreading in social networks with multiple initiators

Dodds & Payne 2009 - Analysis of a threshold model of social contagion on degree-correlated networks

Whitney 2010 - Dynamics theory of cascades on finite clustered random networks with a thresholds rule

Brummitt et al. 2012 - Multiplexity-facilitated cascades in networks

Yağan & Gligor 2012 - Analysis of complex contagions in random multiplex networks

Nematzadeh et al. 2014 - Optimal network modularity for information diffusion