Diffusion of Innovation and Public Health: Lessons from using Social Network Research.

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Outline

• Public Health and Social Network research
  • Diffusion of Innovation theory
  • Network interventions

• An example from a Public Health study on sexual health
  • SN statistical method – To understand what?

• Results and Conclusions
Using Social Network research in Public Health

• **Network interventions** aim at changing people’s behaviours by using people’s social networks. Proximal **social contacts** diffuse healthy behaviours by social influence: people adopt behaviours in order to fit with their friends.

• The most **basic** type of network intervention is **based on opinion leaders**, individuals that act as “champions”.
Using Social Network research in Public Health

• **OLs** are identified through:
  • **Nominations** by members of the social network
  • **Centrality measures**

• OLs share their knowledge with their contacts and since they are influential/well connected they have **great potential** to advance the flow of information.

• Based on the **Diffusion of Innovation theory** that argues that interpersonal communications trigger the spread of new ideas and innovation.

An example: STIs And Sexual Health (STASH)

• Feasibility trial of a sexual health intervention in six schools in Scotland.

• Based on the **Diffusion of Innovation** theory.

• Aimed to promote **STI-prevention and sexual health** through online networks and face-to-face interactions among students (Scottish S4, aged 14-15).
An example: Stis And Sexual Health (STASH)

- **PSs** (OLs) were identified through **nominations**, then trained and invited to use their Facebook account to create **closed FB groups** to share intervention contents (memes, infographics, quizzes) as well as face-to-face.

- A survey collecting **network data** and **sexual health Knowledge*** was conducted both at **baseline** and **follow-up**.

* Other variables were collected but not discussed here.
In order to conduct a network analysis I applied MERGMs:

- (M)ERGMs are **statistical tools** that control for the fact that relationships are **not independent** (e.g., reciprocity, transitivity).

- **Relational mechanisms** are represented as **graph statistics (parameters)**, counted within a network and compared with what we could otherwise obtain by chance. *A positive statistically significant parameter means that the mechanism occurs in my network more often than by chance.*

- MERGMs useful to study the **cross-level interdependent relational mechanisms**.

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Linking MERGMs results with Process Evaluation

- Why MERGMs were useful in this study?

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<th>IMPLEMENTATION</th>
<th>MECHANISMS of IMPACT</th>
<th>CONTEXT</th>
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<td>Fidelity and Delivery</td>
<td>Peer-supporter Selection</td>
<td>Relational Factors</td>
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<td>Cross-level interaction between offline friendship and online Facebook ties</td>
<td>Peer-supporters’ status and network activities</td>
<td>Student’s individual characteristic effects (sexual-health related knowledge; tendency to talk with friends; norms)</td>
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Process evaluation components
Results - Implementation

- Cross-level parameter

- Students who were friends offline were more likely to join the same online STASH FB group.

- Provided *statistically significance* evidence of the *delivery of the intervention* activities and their fidelity.
Results – Mechanisms of Impact

• Actor relation effect for PS

• Only in one school PS were popular and received many friendship nominations.

• Reflecting on the **PS ability to spread** the intervention content considering PS network position.
Actor relation effect for knowledge on sexual health: Are students with more sexual health knowledge less popular and stigmatised?

- Students with **knowledge on sexual health** were neither more nor less popular than others.

- **Students with knowledge did not receive less friendship nominations than others.**

- It suggests that the intervention content and perhaps being a peer supporter did not have **unintended consequences** for the friendship networks.
Conclusion

What does it mean using statistical modelling for understanding the diffusion of information/innovation?

• Modelling gives us **useful insights** to understand of the **distribution of social processes** for the diffusion of information.

• We can capture **how** rather **who**: **how information “is attached” to the relational processes** (e.g. friendship), rather than just mapping who is in a better position to share information.

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Thank you for listening!

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