

Individual Attributes of Behavior Change in an Online Social Network

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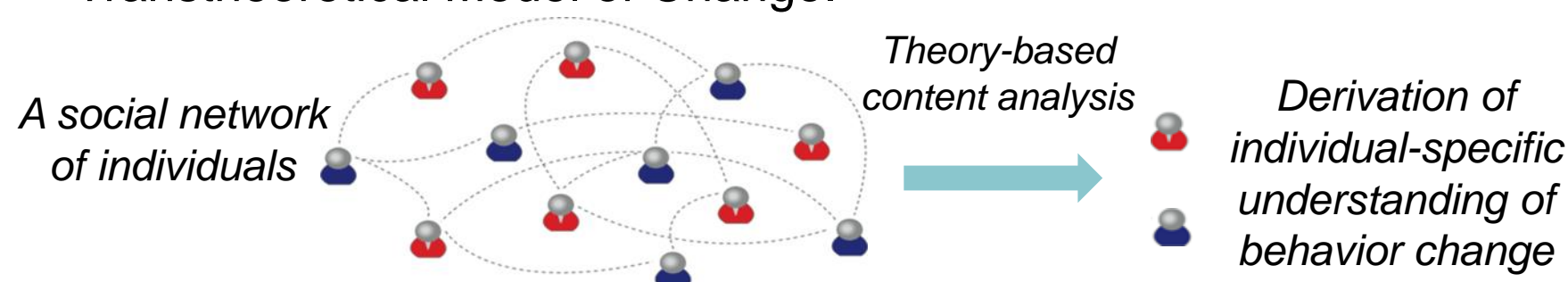
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Introduction

- The growth of online social networks has been phenomenal –
 - 1.73 billion users in 2013¹
 - Around 2.55 billion by 2017¹
- Distinct qualities of these virtual platforms
 - Real-time intervention delivery and data collection
 - Data rich in qualitative and quantitative dimensions
- Social networks have been used to understand the group mechanisms underlying human behavior change².
- Objective: Use of *social* content to understand *individual* factors affecting human behavior by analyzing network content using the Transtheoretical Model of Change.



Materials

- QuitNet, an online social network for smoking cessation support^{2,3}.
- A database of 16,492 de-identified public messages between March 1, 2007 and April 30, 2007 was used.
- Following table presents sample messages selected at random to provide an overview of the nature of QuitNet content.

Sample messages to illustrative the nature of QuitNet message content

Great one week, keep going, congratulations

I had a rough day, lots of tension and craving for nicodemon

I understand what you are going through, please don't give up

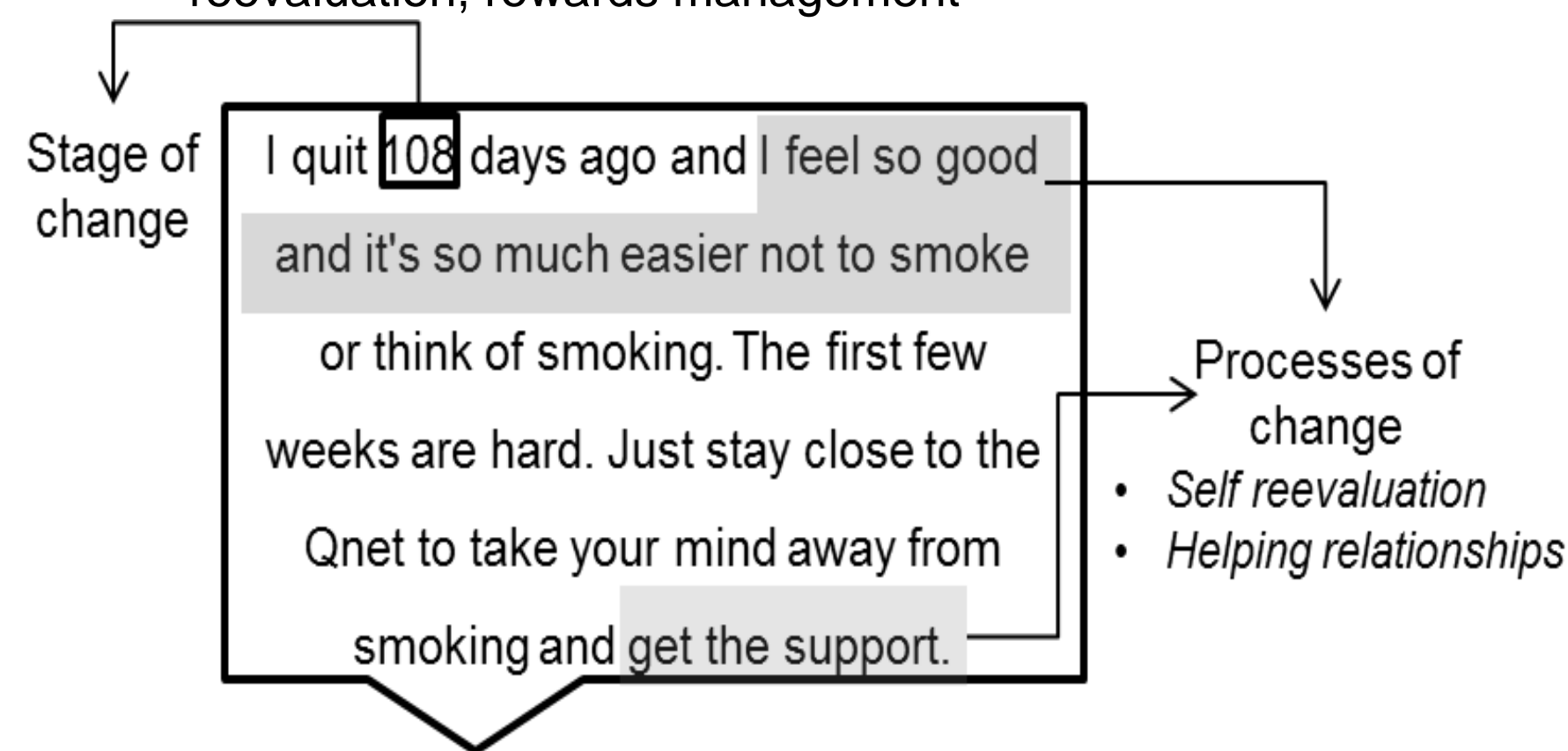
I extend my hand to you for a smokeless day

Theoretical Rationale

- Transtheoretical Model of Change (TTM)^{4,5}
 - Individualized *stages* and *processes* of change
- Stage- Temporality of behavior change
 - Six stages- Precontemplation, contemplation, preparation, action, and maintenance
- Process- cognitive and behavioral concepts such as decisional balance, self-efficacy, and rewards program

Methods

- 100 messages were randomly selected as part of this analysis
- Inclusion criterion - quantitative marker indicating member's progress (number of days a user stays abstinent)
- Stages of change identified using
 - Existing questionnaires used in behavioral therapy for smoking cessation
- Processes of change identified using
 - Theoretical mapping to TTM (line-by-line manual coding)
 - E.g. stimulus control, consciousness raising, self-reevaluation, rewards management

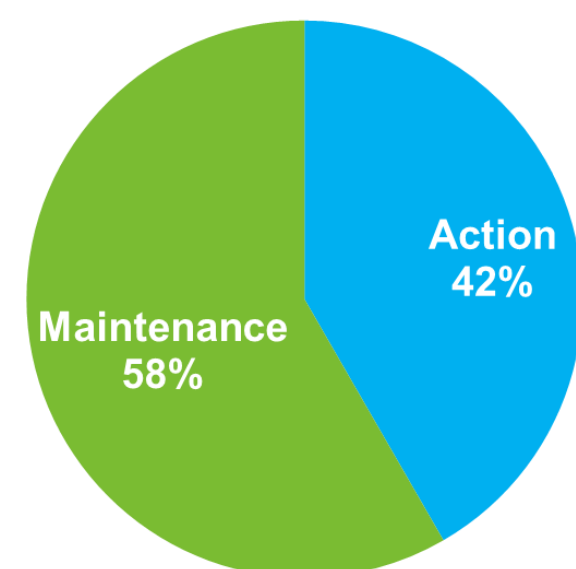


Methodological illustration for mapping stages and processes of change from message content

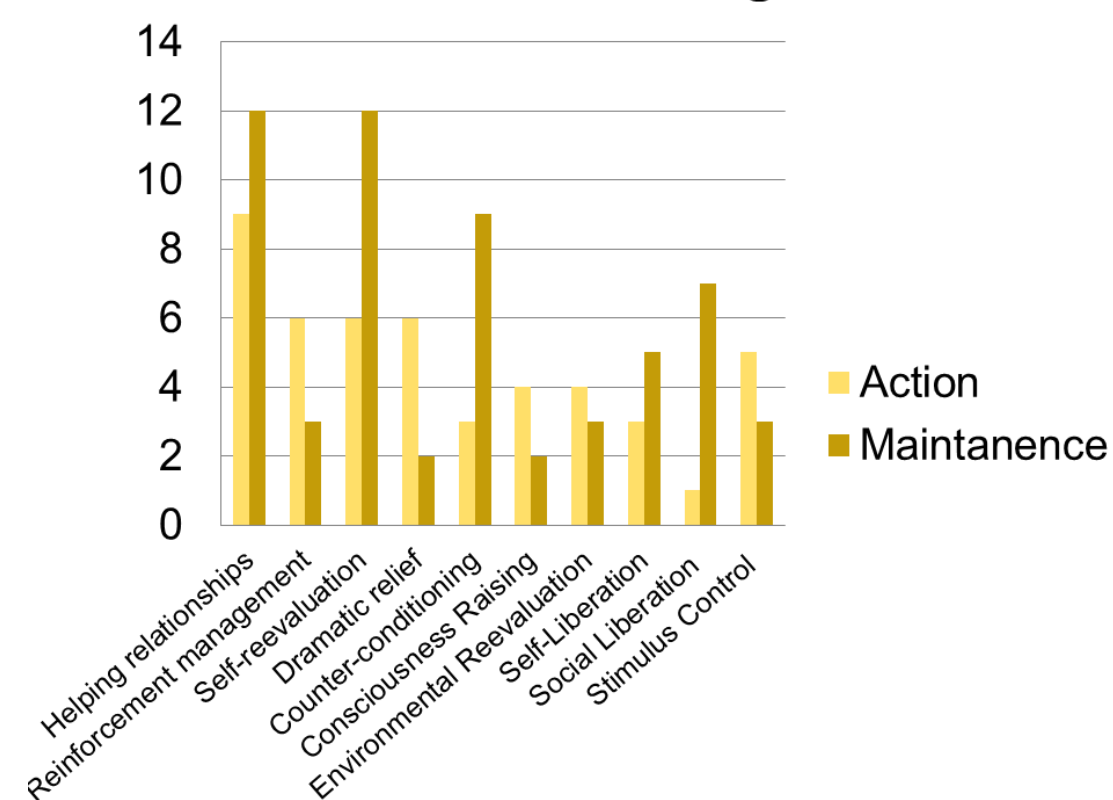
Results

- 72 messages met inclusion criteria
 - identifiable stage and process of change
- Self-reevaluation, helping relationships, reinforcement management, counter- conditioning, and dramatic relief were the most commonly found processes of change.

Distribution of 72 messages based on the member's stage of change



Prevalence of processes of change in QuitNet messages



Conclusions

- Stages of change of QuitNet users (active and maintenance stages) indicate that consumers of QuitNet community are attempting to sustain a behavior change post decision making rather than contemplating a decision to change.
- Processes of change indicate the socio-behavioral needs of QuitNet users at individual level.

Ongoing Research

- Large-scale mining of communication factors affecting individual behavior in a group setting.
- Translating these factors into features of consumer support technologies for behavior change at individual-level and population-level.

References

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Acknowledgements

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