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“Big Data” Study
for Coping with STRESS

Overview

- General psychological theory for coping with stress
- The data - responses from an online mental health service
- A conceptual model is proposed for coping with stress
- A “Big Data” method is described for testing this model
- Results
- Conclusions

Methods of Coping with Stress



Emotional



Avoidant



Detached



Logical

1. Emotion and Avoidant Coping are thought to be less effective

More likely when demands are thought to be uncontrollable

Emotional methods favoured by women

No consistent age effects

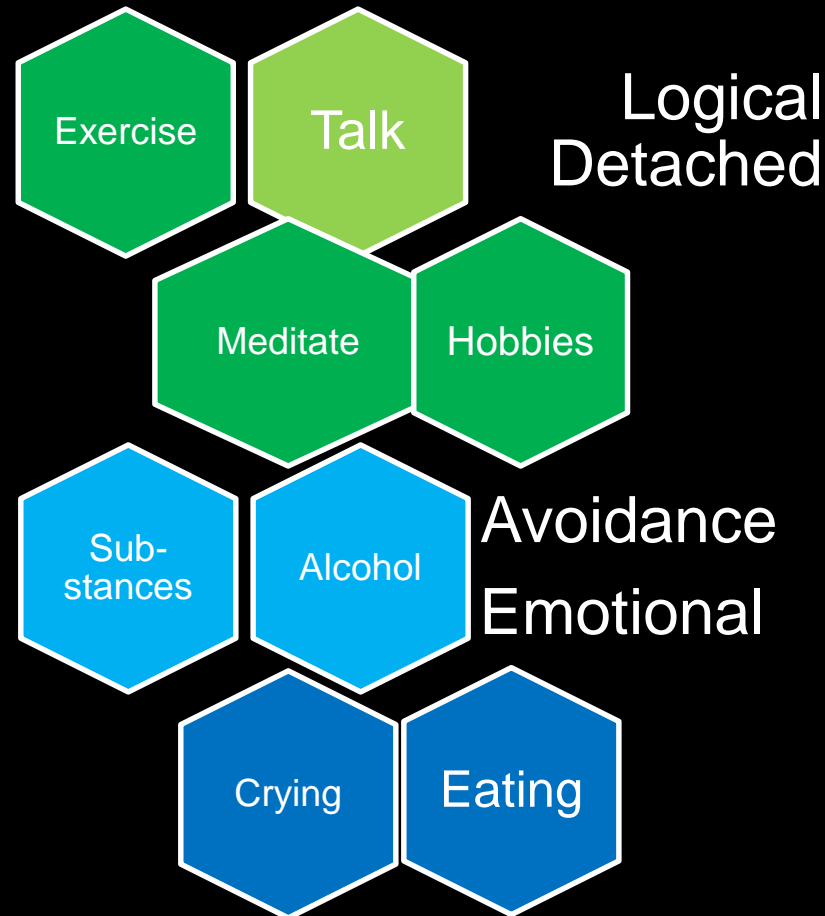
2. Logical and Detached Coping are thought to be more effective

More likely when demands are thought to be controllable

These methods are favoured by men

No consistent age effects

3. A mix of coping activities is likely when levels of psychological distress are high



4. Relationship between coping and psychological distress is time dependent

1.

- Logical and Detached coping are more effective for decreasing psychological distress in the long term

2.

- Emotional and Avoidant coping may be more effective for decreasing psychological distress in the short term

3.

- Reciprocal relationship. Coping choices are sometimes dictated by levels of distress. Sometimes vice versa.

4.

- So, distress is not a good outcome for short-term studies
- Other mental health outcome measures are needed

The Data from Anxiety Online (now MHO=Mental Health Online).

1.

- An online system for diagnosis of 21 MH disorders and treatment of anxiety. 16999 responses : Oct 2009–June 2013.

2.

- Drivers for coping choices: support (Yes/No), MH assistance (4-points), number MH diagnoses, K6, demographics

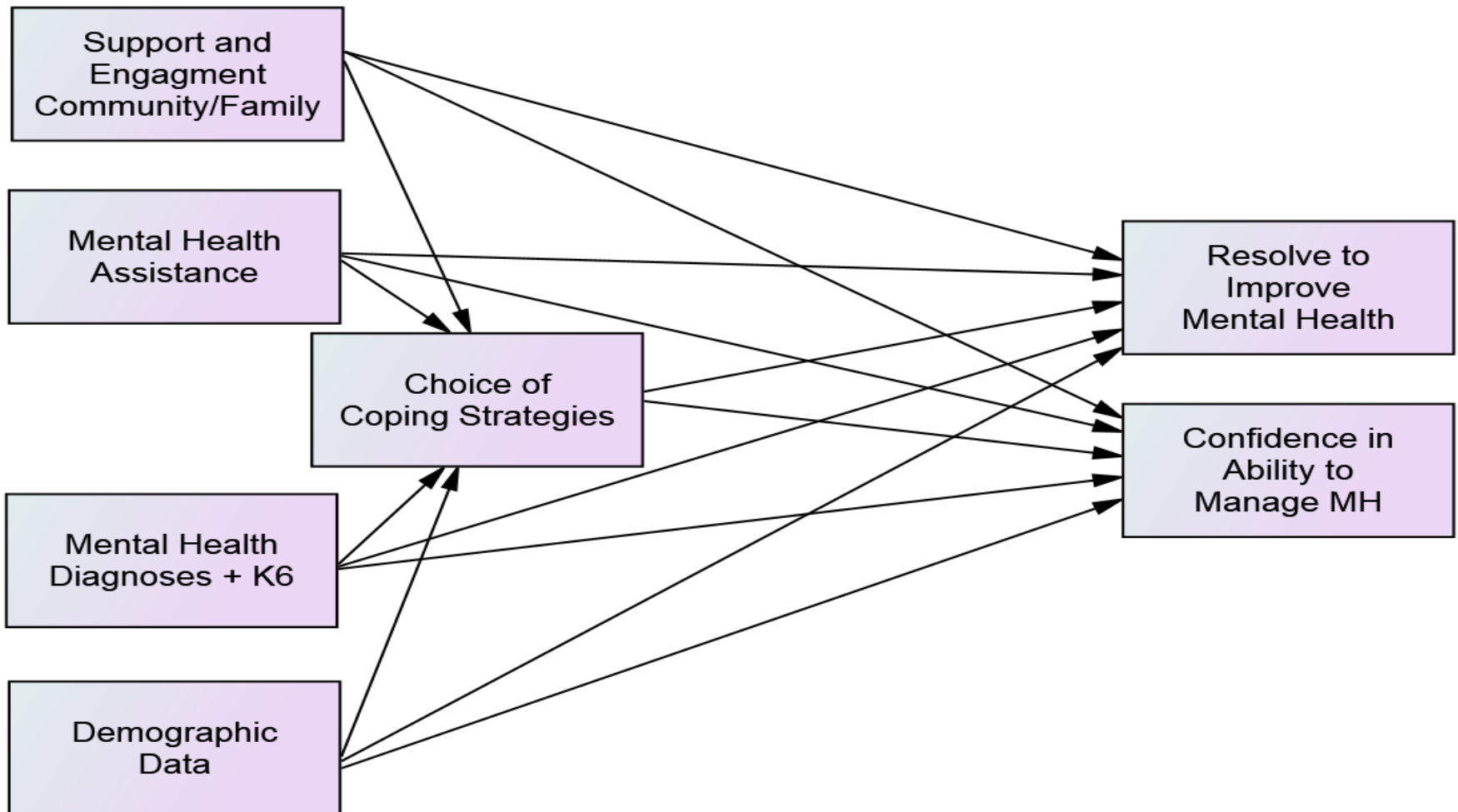
3.

- Coping with stress: Yes/No for alcohol, substances, talk with family/friends, medical doctor, exercise, hobby, meditate, other.

4.

- Outcome measures: Resolve to improve MH management (4-pts). Confidence in ability to manage one's own MH (5-pts).

The conceptual short-term model



“Big Data” Methods Used for Testing Model

1.

- Relatively large data set (N=16999) allowed the grouping of 8 binary coping responses into 9 clusters

2.

- Nominal Logistic Regression used to evaluate relationships between coping drivers and clusters

3.

- Controlling for drivers, nominal logistic regression, was used to test for relationships between coping clusters and outcome measures

9 Clusters named according to **only** common coping activity

Cluster Name	Number responses	Percentage	Maximum # Coping Activities
Emotional/Avoidant☹️	2620	15%	?
Avoidant Substance☹️	1210	7%	8+
Avoidant Alcohol☹️	1537	9%	3
Detached/Avoidant☺️	1816	11%	6+
Logical GP☺️	1600	9%	8+
Detached Meditation☺️	1407	8%	5
Detached Exercise☺️	2674	16%	4
Detached Hobby☺️	1798	11%	2
Logical F&F Talk☺️	2337	14%	1
31% + 58%+11%	16999	100%	

Females more likely to Talk with F&F than Emotion. Age Effect!

Cluster Name	Gender	Age
Emotional/Avoidant☹️	reference	reference
Avoidant Substance☹️	Male	Younger
Avoidant Alcohol☹️	Male	Older
Detached/Avoidant☺️	Similar to ref	Similar to ref
Logical GP☺️	Similar to ref	Older
Detached Meditation☺️	Male	Older
Detached Exercise☺️	Male	Older
Detached Hobby☺️	Male	Younger
Logical F&F Talk☺️	Female	Younger

Support lowest for top 2. Now MH Assist→High # coping activities

Cluster Name (Max # Coping Activities)	Supported F&F, and Community	MH Assistance
Emotional/Avoidant (?)	reference	reference
Avoidant Substance (8+)	Lower	Now
Avoidant Alcohol (3)	Higher	Never
Detached/Avoidant (6+)	Higher	Now
Logical GP (8+)	Higher	Now
Detached Meditation (5)	Higher	Now
Detached Exercise (4)	Higher	Never
Detached Hobby (2)	Higher	Never
Logical F&F Talk (1)	Higher	Never

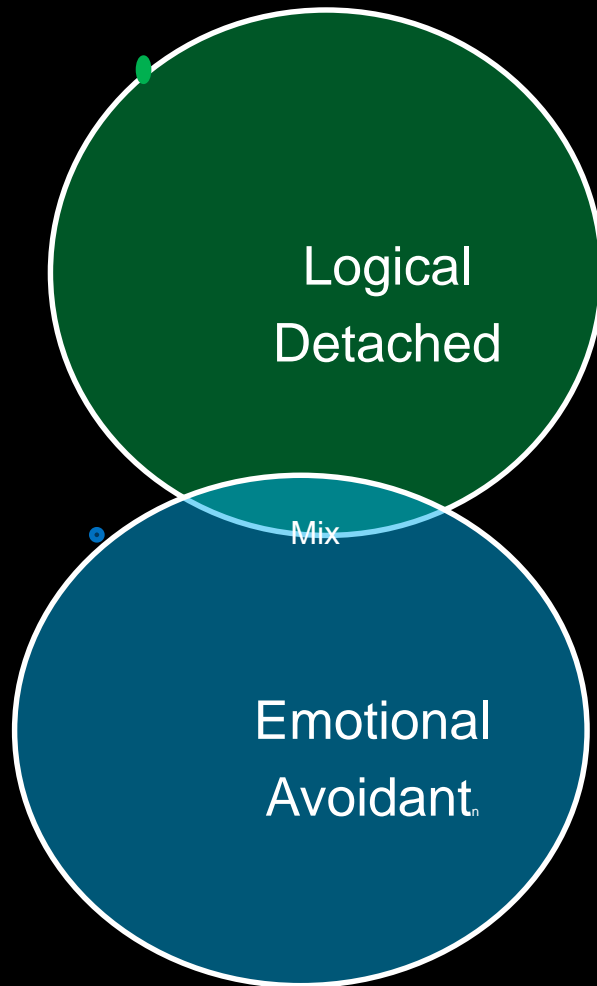
Top 3 clusters have more problems. Alcohol=only 3 activities?

Cluster Name (Max # Coping Activities)	K6 level distress	Number MH Disorders
Emotional/Avoidant (?)	reference	reference
Avoidant Substance (8+)	Higher	Highest
Avoidant Alcohol (3)	Lower	High
Detached/Avoidant (6+)	Lower	Similar to ref
Logical GP (8+)	Lower	Similar to ref
Detached Meditation (5)	Lower	Lower
Detached Exercise (4)	Lower	Lower
Detached Hobby (2)	Lower	Lower
Logical F&F Talk (1)	Lower	Lower

Outcomes worst for top 3 clusters. Substance Good Confidence?

Cluster Name (Max # Coping Activities)	Confidence MH management	Likelihood Now Making MH Improvements
Emotional/Avoidant (?)	ref. Poorest	ref. Lowest
Avoidant Substance (8+)	Good	Similar to ref.
Avoidant Alcohol (3)	Similar to ref.	Similar to ref.
Detached/Avoidant (6+)	Good	High
Logical GP (8+)	Good	Highest
Detached Meditation (5)	Good	Highest
Detached Exercise (4)	Good	High
Detached Hobby (2)	Good	Similar to Ref.
Logical F&F Talk (1)	Good	Similar to Ref.

Summary: Mixtures of coping activities



- More coping strategies used when distress or number of MH disorders is higher
- Outcomes improved only when logical/detached activities dominate
- In the case of substance use high number of coping activities (8+) seem to give false confidence
- In the case of alcohol use other coping activities (>3) may be beneficial

Limitations of Study



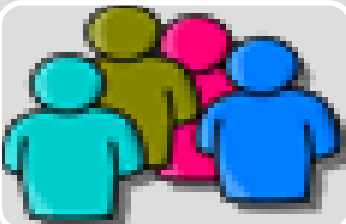
Better coping measures are needed

- Scales for coping measures would be better:
- only 7 + Other activities considered with Yes/No responses



More robust outcome measures needed

- Reduction in stress episodes would be better:
- only resolve to improve MH and confidence to do so



Biased sample

- A more random sample of people would be better:
- Only a self-selected online eTherapy sample considered.

Conclusions

1.

- “Big Data” has allowed a sophisticated analysis resulting in a well supported model for coping with stress.

2.

- Established theory has been generally supported.
- Contrary to previous findings age effects are important and the gender effect is more complicated than expected.

3.

- Future work is needed in order to increase the number of coping strategies of alcohol users and better focus the coping strategies of substance users.

Thank you for your attention

- Are there any questions?

