Development of GPS-tailored questionnaires to derive measures for psychological support during the corona-crisis

Melanie Platz
COVID-19 and mental health

“[…] anxiety and depression (16-28%) and self-reported stress (8%) are common psychological reactions to the COVID-19 pandemic […].”

- Rajkumar (2020)
Development of GPS-tailored questionnaires to derive measures for psychological support during the corona-crisis

GIST-Q & tailored Response

Spatial Decision Support System

Response Support
Activate Response of Health System

Medical Resource
Psychological consultation via telemedicine

Risk/Demand Layers
mental health issues and anxieties related to the corona crisis

Geography Layer

High Availability of Resource R
Psychological consultation resources via telemedicine

Could you provide Resource R to cover Demand in other areas?

Low Risk
Low Risk for mental health affection and anxieties due to the corona crisis

Location/ Federal Province 1

GIST-Questionnaire
Generate Dynamic Questionnaire

12.06.2020
Communication Cycle

1. Observation of citizens
2. Reporting of citizen
3. Spatial analysis of risk and resources
4. Provision of spatial decision support to citizens
5. Possibility of risk mitigation by citizen

Last Mile
Development of GPS-tailored questionnaires to derive measures for psychological support during the corona-crisis
Impact of the Covid 19 pandemic on teaching and learning

STUDY ON DISTANCE LEARNING IN TYROL

VR Prof. Mag. Dr. Irmgard Plattner | HS-Prof. Dr. Melanie Platz
IL HS-Prof. Claus Oberhauser, PhD | Prof. Dr. Sebastian Goreth
IL Prof. Robert Mader, Msc | Dr. Christian Vollmer

12.06.2020
Target Group and Response Rate

A teacher is a person at risk, but also a disseminator.

• Online Questionnaire via SoSci Survey
• Approx. 25 min processing time
• Target group: 11,197 teachers of all school types in Tyrol (Austria)
• N = 2,317 (20.7% response)
• Anonymous data evaluation

1 https://www.soscisurvey.de/
2 only questionnaires with more than 10 min processing time were evaluated
3 except state music schools and pre-school education institutions
Structure of the Questionnaire

Subject, Grade

Teaching before the Corona Crisis

Distance Learning: equipment and experience
Distance Learning: content
Distance Learning: institutional support

Evaluation of Distance Learning

Expectations for the return to face-to-face teaching

Gender

Personality of the teacher

Corona Crisis: daily structure
Corona Crisis: motivation
Corona Crisis: anxieties

1 Resilience Scale (Leppert, Koch, Brähler, Strauß, 2008; Wagnild & Young, 1993)
2 Social Jet Lag (Ronneberg, Kuehnle, Pramstaller, Ricken, Havel, Guth & Merrow, 2004; Wittmann, Dinich, Merrow & Ronneberg, 2009)
3 Emotional Distress - Anxiety (PROMIS Health Organization (PHO), 2008-2016)
Findings: Summary

• With increasing teacher resilience, the rejection of distance learning also decreased significantly among primary school teachers.
• Female teachers reported significantly more anxieties in quarantine than male teachers. The anxieties were negatively related to the teacher's resilience.
• Older teachers with more anxiety in quarantine were unwilling to return to face-to-face teaching.

Mental health issues and anxieties related to the corona crisis have the potential to affect the quality of teaching negatively.
Development of GPS-tailored questionnaires to derive measures for psychological support during the corona-crisis

Communication Cycle: Study

1. Observation of citizens

2. Reporting of citizen

3. Spatial analysis of risk and resources

4. Provision of spatial decision support to citizens

5. Possibility of risk mitigation by citizen

Adjust teacher training

Psychological Support of teachers

Online Questionnaire

Video & Homepage report; Scientific Publications; Data

https://ph-tirol.ac.at/studie-distance-learning
Six important roles for the psychiatrist (Banerjee, 2020):

1. **education** of the public about the common psychological effects of a pandemic,
2. motivating the public to **adopt strategies** for disease prevention and health promotion,
3. integrating their services with available health care,
4. teaching **problem-solving strategies** to cope with the current crisis,
5. empowering patients with COVID-19 and their caregivers, and
6. provision of mental health care to healthcare workers.
Further development of the Questionnaire

Generate questionnaire **tailored** to location where and circumstances under which the questionnaire is used. Questionnaire of the Study in Tyrol (Austria) can be used as basis. (Spatial Decision Support)

**Personalization** of questionnaire, enhance with local information, limit questionnaire to available time and highest medical priority. (Adaptive Testing)

Self-assessment framework that can be kept **private** by the user or **shared** in an encrypted way for anamnesis of public health support centers in the respective country.

Development of risk/demand and resource supply maps in GIS (GIS Risk and Resource Maps) using **open** geospatial data (Open Data Kit, Open StreetMap) and **open** source Geographic Information Systems (GRASS GIS, R).
Questions & Challenges

How does a **functional tailored support** look like?

**Proposed therapeutic strategies** (a.o. Duan & Zhu, 2020; Liu et al., 2020a; Liu et al., 2020b; Xiao, 2020; Zhou et al., 2020; Yao et al., 2020)

> [...] depend crucially on the **availability of trained manpower and infrastructure**, and it is not known to what extent these approaches will be **accepted** by the general public. Moreover, they have not yet been tested or validated in the respective target populations.

- Rajkumar (2020)
Thank you very much for your attention!

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Web: https://ph-tirol.ac.at/ | https://ph-tirol.ac.at/studie-distance-learning
References I

- PROMIS Health Organization (PHO) 2008-2016. Emotional Distress - Anxiety - Short Form 7a. PROMIS Item Bank v.1.0. Available at: https://www.healthmeasures.net/explore-measurement-systems/promis
References II


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RELEVANCE
Relevance

- SDG 4 aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.¹
- “A fundamental change is needed in the way we think about education’s role in global development, because it has a catalytic impact on the well-being of individuals and the future of our planet.” (Irina Bokova, former Director-General of UNESCO, 2009-2017)²

¹ https://sustainabledevelopment.un.org/sdg4
GIST-Q AND TAILORED SUPPORT
Proposals for more specific therapeutic strategies providing mental health services in an easily accessible manner without any increase in infection risk include:

- development of teams of specialists qualified to address emotional distress (Duan & Zhu, 2020);
- the training of community health personnel in basic aspects of mental health care (Duan & Zhu, 2020);
- the use of online surveys to assess the scope of mental health problems (Liu et al., 2020b);
- the development of online materials for mental health education (Liu et al., 2020a);
- the provision of online counselling and self-help services (Liu et al., 2020b);
- the use of structured letters as a form of asynchronous telepsychiatry consultation (Xiao, 2020);
- the development of synchronous telemedicine services for diagnostic purposes as well as counselling (Zhou et al., 2020);
- and the need to make online mental health services accessible to individuals from lower socioeconomic strata (Yao et al., 2020).
Tailored Response: Regional Differences

Data Analysts
Mathematical Modellers
Health Experts
Innovation Ecosystem Experts
Mapping Experts
ICT Experts

Presentation of Results and Recommendations
Decision Makers
Information Delivery
GIS Data
GIS Database

Citizens/Community

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GIST-Q & tailored Response

Development of GPS-tailored questionnaires to derive measures for psychological support during the corona-crisis

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GIST-Questionnaire
Generate Dynamic Questionnaire

Response Support
Activate Response of Health System

RESOURCE MANAGEMENT SYSTEM
Spatial Decision Support System

Medical Resource
Risk/Demand Layers
Geography Layer

Low Availability of Resource R
Psychological consultation resources via telemedicine

High Risk for mental health affection and anxieties due to the corona crisis

Location/ Federal Province 2
Did you know about Resources R at location 1 to cover your demands?
related to the mental state and anxieties of teachers

SELECTED FINDINGS
Objectives/ Research Questions

• What **attitudes** do teachers have towards distance learning and teaching after lockdown?
• How is the **mental state** of the teachers and what anxieties do they have due to Covid 19?
• Does the mental state of teachers **influence** the attitudes towards teaching during and after the crisis?

A teacher is a person at risk, but also a disseminator.
Findings

There is a high degree of resilience among the teachers. Female teachers are significantly more psychologically resilient than male teachers.

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1 Statistik Austria (2020), p. 333
Distance learning was less suitable for primary school than for other types of schools. With increasing teacher resilience, the rejection of distance learning also decreased significantly among primary school teachers.

Resilience is psychological resistance or the ability to survive difficult life situations without lasting impairment.

Example item: “When I’m in a difficult situation, I can usually find my way out of it.”
Female teachers reported significantly more anxieties in quarantine than male teachers.

The anxieties were negatively related to the teacher's resilience.
Older teachers with more anxiety in quarantine were unwilling to return to face-to-face teaching.

<table>
<thead>
<tr>
<th>Age of the teacher</th>
<th>Frequency</th>
</tr>
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<tbody>
<tr>
<td>up to 39 years</td>
<td>29%</td>
</tr>
<tr>
<td>40-54 years</td>
<td>43%</td>
</tr>
<tr>
<td>55 years and older (and not in maternity leave)</td>
<td>28%</td>
</tr>
</tbody>
</table>

In Tyrol in the school year 2018/19, 29% of teachers were up to 39 years, 43% of teachers were 40-54 years, and 28% of teachers were 55 years and older (and not in maternity leave).  

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1 Statistik Austria (2020), p. 336