Public engagement of scientists (Science Communication)

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BRIEF DESCRIPTION
Public engagement of scientists is defined as “all kinds of publicly accessible communication carried out by people presenting themselves as scientists. This includes scholarly communication directed at peers as well as science communication directed at lay publics” (Jünger & Fähnrich, 2019, p. 7).

THEORETICAL FOUNDATION
The variable “public engagement of scientists” can be differentiated according to the following three main dimensions (Jünger & Fähnrich, 2019):

1. Directions of engagement: Describes the extent to which communication scientists on Twitter connect with people from different sectors of society (e.g. science, politics, media, economy). This allows conclusions to the potential influence of scientists reaching specific audiences beyond the scientific community (Jünger & Fähnrich, 2019).

2. Topics of engagement: Previous research reveals that social scientists not only act as experts in their research field, but often present themselves as public intellectuals by also referring to political and social issues (Albæk, Christiansen, & Togeby, 2003; Fähnrich & Lüthje, 2017). For this reason, communication scientists are expected to communicate not only on scientific but also on political or economic issues.

3. Modes of engagement: In addition to disseminating information, social networking sites also allow for more interactive ways of maintaining relationships. Thus, following Ellison and Boyd (2013), it can be assumed that communication on social networking sites can be both content-centered and user-centered. This dimension can be linked to the speech act theory (Klemm, 2000; Searle, 1990), according to which every use of language has a performative function.

REFERENCES/COMBINATION WITH OTHER METHODS OF DATA COLLECTION
In some cases, a mixed method approach, employing two data collection methods, is applied: a content analysis is complemented by a survey to gain information about the science communicators such as demographic information (Hara, Abbazio, & Perkins, 2019). Furthermore, their social networks are investigated by means of network analysis (Walter, Lörcher, & Brüggemann, 2019).

EXAMPLE STUDIES
Hara et al. (2019); Jahng & Lee (2018); Kouper (2010); Mahrt & Puschmann (2014); Walter et al. (2019)

INFORMATION ON JÜNGER & FÄHNRICHT, 2019
Authors: Jakob Jünger & Birte Fähnrich
Research questions: RQ1: How can the public engagement of scientists in the context of online communication be conceptualized? RQ2: Which types of engagement occur in the Twitter activity of communication scholars?
Object of analysis: Tweets and followers belonging to the Twitter profiles of communication scientists who are following the International Communication Association (ICA) on Twitter
INFORMATION ABOUT VARIABLES

Variable name/definition: Subject area of the content of the tweets
Level of analysis: Tweet
Values:
• Science-related topics (research, teaching)
• Non-scientific topics (politics, economy, media, sports, environment, society, leisure time, and others)
Scale of measurement: Nominal
Reliability: Gwet’s AC1: 0,71 – 1,00
Holsti: 0,82 – 1,00

Variable name/definition: Language patterns of communication scientists (Speech acts)
Level of analysis: Tweet
Values:
• Actor-centered patterns (discussing, activating, socializing),
• Content-centered patterns (reporting, commenting),
• Other language patterns
Scale of measurement: Nominal
Reliability: Gwet’s AC1: 0,54 – 0,95
Holsti: 0,75 – 1,00

Variable name/definition: References of the communication scientists on Twitter
Level of analysis: Tweet
Values:
• Self-reference,
• Reference to specific actor,
• Reference to other unspecific actor,
• No reference to actors
Scale of measurement: Nominal
Reliability: Gwet’s AC1: 0,83 – 0,87
Holsti: 0,88 – 0,93
Kappa: 0,58 – 0,85
Krippendorff’s Alpha: 0,51 – 0,83

Variable name/definition: Type of actor (followers of the investigated scientists)
Level of analysis: Self description in profile
Values:
• Person,
• Organization
Scale of measurement: Nominal
Reliability: Gwet’s AC1: 0,89

INFORMATION ON WALTER, LÖRCHER & BRÜGGE-MANN, 2019

Authors: Stefanie Walter, Ines Lörcher & Michael Brüggemann
Research question: How do scientists interact with politicians and civil society on Twitter?
Object of analysis: Climate-related English-language Tweets posted by scientists from the United States (to classify the Twitter users, an automated content analysis, a dictionary approach, was applied; Krippendorff’s Alpha: 0,74)
Timeframe of analysis: Data collection took place from October 1, 2017 to March 31, 2018.

INFORMATION ABOUT VARIABLES

Variable name/definition: Mode and content of communication
Level of analysis: Tweet
Values:
• Negative emotion,
• Certainty
Scale of measurement: Linguistic Inquiry and Word Count (LIWC) program for computerized text analysis
Reliability: –
Codebook: in the appendix (R-Script)
INFORMATION ON HARA ET AL., 2019
Authors: Noriko Hara, Jessica Abbazio & Kathryn Perkins
Research questions/research interest: RQ1: What kind of demographic characteristics do the scientists participating in “Science” subreddit AMAs have? [survey]
RQ2: What was the experience like to host an AMA in the “Science” subreddit? [survey]
RQ3: What type of discussions did “Science” subreddit AMA participants engage in?
RQ3a: Do questions receive answers?
RQ3b: What are posters’ intentions?
RQ3c: What kind of content features appear?
RQ3d: Who is posting comments?
RQ3e: What kind of responses do posts receive?
Object of analysis: Six Ask Me Anything (AMA) sessions on Reddit’s “Science” subreddit (r/science)
Timeframe of analysis: –

INFORMATION ABOUT VARIABLES
Variable name/definition: Poster’s intentions (PI); Answer status (AS); Comment status (CS); Poster’s identity (PID); Content features (CF)
Level of analysis: Post
Values:
PI:
• Seeking information,
• Seeking discussion,
• Non-questions/comments,
• Further discussion/interaction among users,
• Answering a question
AS:
• Answered,
• Not answered
CS:
• Commented on,
• Not commented on
PID:
• Host,
• Participant – flair,
• Participant – no flair
CF:
• Providing factual information,
• Providing opinions,
• Providing resources,
• Providing personal experience,
• Providing guidance on forum governance,
• Making an inquiry – initial question,
• Making an inquiry – embedded question,
• Requesting resources,
• Off-topic comment
Scale of measurement: Nominal
Reliability: Intercoder reliability ranged between 0.66 and 1.0 calculated by Cohen’s Kappa
Codebook: in the appendix (in English)

REFERENCES