Correlational linkage analysis (Frequently Applied Designs)

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BRIEF DESCRIPTION

Correlational or second-order linkage analyses (Schulz, 2008) correlate content data points and survey data at the aggregate level. They are generally used to infer the impact of public opinion climate, the media context or media use on individual attitudes, cognitions and behaviors. Correlational linkage analyses make use of data collected at different points in time to be able to describe patterns of change and stability over time and to compensate for the reduced number of observations resulting from aggregating individual-level data. They often employ manual and automated content analysis, descriptive and inferential statistical analyses, and time series analysis.

FIELD OF APPLICATION/THEORETICAL FOUNDATION

Linkage analyses have extensively been used in the fields of political communication (Soroka, 2002), EU studies (Brosius et al., 2019a), and more recently, social media and social movements. Studies that employed second-order linkage analyses are related to theories of agenda setting (McCombs & Shaw, 1972), framing (Vliegenthart et al., 2008), or media bias and tone (Brosius et al., 2019b) (see chapter Content Analysis in Mixed Method approaches for a detailed account of applications and advantages of using linkage analyses).

EXAMPLE STUDIES

In this data entry we describe two studies that regress survey data on media content data with additional weighs to better model news media effects. The first study (Boomgaarden & Vliegenthart, 2007) weigh media coverage of a particular topic (immigration) by issue prominence and circulation of the newspapers considered in the study. The second one (Vliegenthart et al., 2008) further introduces a publication recency moderator to account for how close in time a given news story was published from when survey data was collected and individuals may have been exposed to such piece of information.

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Table 1. *Data matching in correlation linkage analyses*

Author(s)	Relationship of theoretical interest	Sample	Time frame	Content-analytical constructs	Linkage strategy
Boomgarden & Vliegenthart (2007)	News media reporting about immigration-related topics on aggregate share of vote intention for anti-immigrant parties	(a) 157,968 articles collected through computer-assisted analysis, dealing with immigration and published in the five most-read Dutch national newspapers (b) Monthly self-reports on vote intention toward anti-immigrant parties from surveyed representative samples of the Dutch population (c) Monthly number of people that moved to the Netherlands and unemployment rates available from the Dutch governmental statistical institute	1990-2002	Visibility of immigration-related topics in news	(1) The authors calculate a visibility score per article by computing: (1.1.) an average person's log probability that s/he is exposed to news about immigration through a given article. This is done by using the frequency with which this article mentions immigration-related topics (f(t,a), both in the headline (fh(t,a)), in which case the frequency is weighed by 8, and in the body of the text (fb(t,a)), in which case the frequency is multiplied by 2. (1.2.) 1.1. is weighed by circulation of the newspaper where the article is published (c(a)). (1.3.) 1.1. is weighed by whether the article is placed in the front page or other to account for how prominently the topic is featured (fp(a)).

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					Notationally, the equation can be written as follows: $V(t,a) = \sum_{a} log(f_h(t,a) + f_b(t,a)) * c(a) * fp(a)$ (2) In a second step, V(a) are aggregated for all articles in all outlets by month (the time unit to link content and survey data) (3) Final immigration visibility scores (independent variable) are linked to monthly percentage of people that reported intending to vote for an anti-immigration party (dependent variable) through time series analysis. The authors run ARIMA models, successively adding controls for extreme right leadership peaks (Fortuyn's entrance in the political arena and assassination), immigration levels, unemployment rates, the interaction between the both and finally, the media visibility variables.
Vliegenthart, Schuck, Boomgaarden, De Vreese (2008)	How framing of EU news in terms of benefit and conflict explains public support for the EU	(a) 329,746 articles that contained at least one reference to the European institutions in main newspapers of 7 EU countries (Denmark, Germany, Ireland, Italy, the Netherlands, Spain, and the United Kingdom) were computer-assisted content analysed to ob-	1990–2006	(a) News media attention/ visibility of the EU (b) Presence of a benefit frame or a disadavantage frame in EU news coverage © Presence of a conflict framing in EU news	(1) Articles dealing with the EU (at least one reference) are weighed by prominence and publication recency as follows: Articles on the first page of a newspaper are counted twice as heavily as articles in the remainder of the newspaper; articles appearing in the month before a Eurobarometer survey was conducted are weighed six times, they are counted five times if appeared 2 months before, etc. The weighted EU visibility score is aggregated for each time

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		tain data on EU media visibility. (b) 9,649 hand-coded articles that mentioned the EU at least twice (at least one of these references in the headline or in the lead of the article) were then analysed to investigate the framing of the EU. Approximately 50 articles per country were coded for each 6-month period. (c) Self-reports on EU support from the bi-annual standard Eurobarometer.		coverage	period t in each country c. (2) Framing scores are then assigned to each article (benefit and disadvantage frames 0-2, conflict framing ranged from 0 to 3) (3) Mean framing scores per time period–country combination (fs(t,c)) are multiplied by visibility scores (vs(t,c)) to capture the overall salience of the frames (beyond its presence) as follows: $S(t,a) = fs(t,c) * vs(t,c)$ (4) OLS regressions with panel corrected standard errors are run with benefit, disadvantage and conflict framing as main independent variables, and aggregated-level support for the EU as dependent variable