

Abstract

Background

Obesity is one of the biggest threats to global public health, with adolescents' dietary behaviors as a major area of attention. Research has demonstrated an association between the content and linguistic style of diet-related online communications and health outcomes like obesity or diabetes. However, the dietary communication patterns of adolescents are currently not well understood. Also, it is unclear what type of diet-related messages might be particularly influential for adolescents. The present paper investigates dimensions of message content and linguistic style in adolescents' diet-related communications. Further, it assesses to what extent each message dimension is related to influence potential (i.e., message liking).

Method

The study used an online communication dataset ($N = 72,384$ messages) of adolescents in primary and secondary school ($N = 774$, 8 – 17 y/o). We analyzed the message content using tailor-made diet- and health-related dictionaries and LDA topic modeling. The linguistic style of the messages was investigated by assessing the sentiment and underlying psychological dimensions. Further, we used multivariate linear regressions to test how each message dimension was related to message liking, which was considered as an indicator of a message's influence potential regarding peers' dietary behaviors. An additional exploratory analysis investigated other potential predictors of message liking, such as message length, containing an image (yes/no), and containing a diet-related image (yes/no).

Results

Overall, 3% of adolescents' messages dealt with diet-related matters. Adolescents showed a preference to discuss neutral-to-unhealthy dietary items slightly more often than healthy items. However, the linguistic style (sentiment and psychological dimensions) did not differ for different levels of message healthiness. Further, no association emerged between message content (i.e., message healthiness and topics) and the number of likes that a message received. Messages with more positive sentiment and higher subjectivity received slightly more likes. Moreover, explorations indicate messages containing an image (vs. no image) as the strongest predictor of message liking.

Conclusion

The study confirms previous findings that adolescents have a preference for discussing unhealthy dietary items in their online diet-related communications. The findings indicate that the healthiness or the content of a message does not explain its popularity on social media. Rather, the way *how* diet-related content is formulated (i.e., in a positive and subjective tone) emerged as a more important predictor for message liking. Moreover, exploratory findings showed that dietary messages that contain images receive considerably more likes. The findings suggest that the visual dimensions of a message might be a stronger predictor of message liking than its textual characteristics.

Keywords: diet-related communication, social media, topic modeling, natural language processing, social influence, message engagement