CURRICULUM VITAE
(updated December 10, 2018)

JAMES R. "JAMIE" COLLINS

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EDUCATION

2017 **Ph.D., Chemical Oceanography, MIT/WHOI Joint Program in Oceanography**
Thesis title: *The remineralization of marine organic matter by diverse biological and abiotic processes*
Advisor: Dr. Benjamin Van Mooy

2011 **M.E.Sc., Marine Biogeochemistry, Yale School of Forestry & Environmental Studies**
Thesis title: *Estimates of new and total productivity in central Long Island Sound from in situ measurements of nitrate and dissolved oxygen*
Advisor: Dr. Peter Raymond

2004 **B.A., Political Science, Yale College**

PROFESSIONAL EXPERIENCE

2018 – present State On-Scene Coordinator, Emergency Response Program, Oregon Department of Environmental Quality

2017 – present Guest Investigator, Dept. Marine Chem. & Geochem., Woods Hole Oceanographic Inst.

2017 – 2018 Moore/Sloan & WRF Innovation in Data Science Postdoctoral Fellow, eScience Institute and School of Oceanography, Univ. of Washington

2017 Postdoctoral Investigator, Dept. Marine Chem. & Geochem., Woods Hole Oceanographic Inst.

2011 – 2016 Research Assistant, Dept. Marine Chem. & Geochem., Woods Hole Oceanographic Inst.

2009 – 2011 Research Assistant and Licensed Captain, Yale Sch. of Forestry & Environmental Studies

AWARDS & HONORS

2017 Moore/Sloan & Washington Research Foundation Innovation Postdoctoral Fellowship in Data Science

2016 Invited Participant, DISCO XXV (NSF/NOAA Dissertations Symposium on Chemical Oceanography)
Student Fellow (Data Stewardship Cluster), Federation of Earth Science Information Partners (ESIP)

2014 Antarctica Service Medal of the United States of America

2012 EPA Science to Achieve Results (STAR) Graduate Fellowship

2009 Post-9/11 G.I. Bill "Yellow Ribbon" Program Recipient, Yale School of Forestry & Environmental Studies

2004 Montaigne Prize, Yale College, for excellence in spoken and written French

2000 Golub Foundation Founder's Scholarship, Yale College
William A. Henry III Scholarship, Yale College

PROFESSIONAL PUBLICATIONS (* Manuscript in review or revision)

8. Becker, K. W., **J. R. Collins**, B. P. Durham, R. D. Groussman, A. E. White, Helen F. Fredricks, Justin E. Ossolinski, Daniel J. Repeta, P. Carini, E. V. Armbrust, and B. A. S. Van Mooy. 2018. Daily changes in phytoplankton lipidomes reveal mechanisms of energy storage in the open ocean. *Nature Communications* **9**: 5179; doi:10.1038/s41467-018-07346-z.

7. Farnelid H., K. Turk-Kubo, H. Ploug, J. E. Ossolinski, **J. R Collins**, B. A. S. Van Mooy, and J. P. Zehr. 2018. Diverse diazotrophs are present on sinking particles in the North Pacific Subtropical Gyre. In press, *The ISME Journal*; doi:10.1038/s41396-018-0259-x.

6. **Collins, J. R.**, H. F. Fredricks, J. S. Bowman, C. P. Ward, C. Moreno, K. Longnecker, A. Marchetti, C. M. Hansel, H. W. Ducklow, and B. A. S. Van Mooy. 2018. The molecular products and biogeochemical significance of lipid photooxidation in West Antarctic surface waters. *Geochimica et Cosmochimica Acta* **232**: 244–264; doi:10.1016/j.gca.2018.04.030.

5. **Collins, J. R.**, P. D. Fucile, G. McDonald, J. E. Ossolinski, R. G. Keil, J. R. Valdes, S. C. Doney, and B. A. S. Van Mooy. 2018. An autonomous, *in situ* light-dark bottle device for determining community respiration and net community production. *Limnology & Oceanography: Methods* **16**:323-338; doi:10.1002/lom3.10247.

4. Laber, C. P., J. E. Hunter, A. F. Carvalho, **J. R. Collins**, E. Hunter, B. Schieler, E. Boss, K. More, M. Frada, K. Thamatrakoln, C. Brown, C. M. L. Haramaty, J. E. Ossolinski, H. F. Fredricks, J. I. Nissimov, R. Gardella, U. Sheyn, Y. Lehahn, R. J. Chant, A. M. Martins, M. J. L. Coolen, A. Vardi, G. R. DiTullio, B. A. S. Van Mooy, and K. D. Bidle. 2018. *Coccolithovirus* facilitation of carbon export in the North Atlantic. *Nature Microbiology* **3**:537-547; doi:10.1038/s41564-018-0128-4

3. **Collins, J. R.**, B. R. Edwards, H. F. Fredricks, and B. A. S. Van Mooy. 2016. LOBSTAHS: An adduct-based lipidomics strategy for discovery and identification of oxidative stress biomarkers. *Analytical Chemistry* **88:**7154-7162; doi:10.1021/acs.analchem.6b01260

2. **Collins, J. R.**, B. R. Edwards, K. Thamatrakoln, J. E. Ossolinski, G. R. DiTullio, K. D. Bidle, S. C. Doney, and B. A. S. Van Mooy. 2015. The multiple fates of sinking particles in the North Atlantic Ocean. *Global Biogeochemical Cycles* **29**:1471-1494; doi:10.1002/2014GB005037

1. **Collins, J. R.**, P. A. Raymond, W. F. Bohlen, and M. M. Howard-Strobel. 2013. Estimates of new and total productivity in central Long Island Sound from *in situ* measurements of nitrate and dissolved oxygen. *Estuaries and Coasts* **36**:74-97; doi:10.1007/s12237-012-9560-5

TEACHING EXPERIENCE

Winter 2018 **Guest Lecturer**, Marine Geochemistry (OS212), Maine Maritime Academy, Castine, ME. Invited guest lecture on air-sea gas exchange for undergraduate course in chemical oceanography.

Fall 2017 **Instructor**, Software Carpentry, University of Washington, Seattle, WA. One of three primary instructors in R-based section of flagship Software Carpentry workshop. Topics included introductory UNIX shell scripting, Python and R programming, and Git versioning.

Fall 2014 – Fall 2016 **Guest Lecturer**, Yale College Environmental Studies Senior Research Colloquium. Developed and presented targeted, two-day orientation in chemical oceanography, basic biogeochemical analysis and mass spectrometer methods for 10-15 Yale undergraduates. Curriculum included practical demonstrations and classroom lectures.

Fall 2014 **Teaching Assistant**, Marine Chemistry (12.742), Massachusetts Institute of Technology. Assisted students with understanding and interpretation of lecture material from introductory chemical oceanography survey course; graded problem sets; prepared and led weekly recitation (one hour) on lecture concepts and additional topics of my choice

Fall 2012 **Guest Lecturer**, two-week industry partner resident course for BP plc scientists and engineers, Woods Hole Oceanographic Institution, Woods Hole, MA. Two invited guest lectures on introductory marine science topics.

Fall 2011 **Guest Lecturer**, Organic Pollutants in the Environment (F&ES 706a/F&ES 307/EVST 307), Yale School of Forestry & Environmental Studies, New Haven, CT. Graduate course. Three invited guest lectures on organic geochemistry, discovery and application of molecular biomarkers, and petroleum extraction.

PROFESSIONAL ACTIVITIES

Manuscript reviewer (at least one review for each over past two years):

Analytical Chemistry, *Biogeosciences, Estuaries and Coasts, Deep-Sea Research Part II, Geochimica et Cosmochimica Acta, The ISME Journal, Journal of Geophysical Research – Oceans, Limnology & Oceanography: Methods*

Session organizer and co-convener:

2018 *Feast After the Famine: Discoveries Based on Big Data*, Ocean Sciences Meeting, Portland, OR

Invited panelist:

2018 *AGU/Ocean Sciences Data Fair: Data Capacity Building,* Ocean Sciences Meeting, Portland, OR

2010 *Disaster in the Gulf: A Panel Discussion on the Deepwater Horizon Oil Spill,* Yale Climate & Energy Institute, New Haven, CT

SOFTWARE AUTHORSHIP

Collins, J. R., B. R. Edwards, Helen F. Fredricks, and B. A. S. Van Mooy. 2017. LOBSTAHS: Lipid and Oxylipin Biomarker Screening through Adduct Hierarchy Sequences. R package version 1.5.0. Available via Bioconductor; doi:10.18129/B9.bioc.LOBSTAHS.

PATENTS

Adduct-based system and methods for analysis and identification of mass spectrometry data. *U.S. Patent Application No. 15/613,187*. **Collins, J. R.**, B. A. S. Van Mooy, Helen F. Fredricks, and B. R. Edwards. 2017.

INVITED TALKS & LECTURES

Collins, J. R., B. R. Edwards, Helen F. Fredricks, K. W. Becker, and B. A. S. Van Mooy. September 2016. "Investigating oxidative stress and metabolic function in marine microbes using new a tool for environmental lipidomics." Bigelow Laboratory for Ocean Sciences, East Boothbay, ME.

Collins, J. R., B. R. Edwards, Helen F. Fredricks, K. W. Becker, and B. A. S. Van Mooy. June 2016. "Investigating oxidative stress and metabolic function in marine microbes using new a tool for environmental lipidomics." Fort Johnson Marine Science Seminar, National Institute of Standards and Technology/Hollings Marine Laboratory, Charleston, SC.

Collins, J. R., B. R. Edwards, K. Thamatrakoln, J. E. Ossolinski, G. R. DiTullio, K. D. Bidle, S. C. Doney, and B. A. S. Van Mooy. September 2015. "Balancing the direct and indirect removal of sinking particles in the North Atlantic Ocean." Departmental Seminar, Department of Marine Chemistry & Geochemistry, Woods Hole Oceanographic Institution, Woods Hole, MA.

Collins, J. R., and P. A. Raymond. March 2012. "Controls on new production and nitrate inventory in central Long Island Sound." Biogeochemistry Seminar, Department of Marine Chemistry & Geochemistry, Woods Hole Oceanographic Institution, Woods Hole, MA.

RESEARCH SUPPORT

2017 NSF-PLR 1543328: *Production and fate of oxylipins in waters of the Western Antarctic Peninsula: Linkages between UV radiation, lipid peroxidation, and carbon cycling*. Proposal co-author and project participant. $582,484 award to B. A. S. Van Mooy.

2013 Ocean Ventures Fund, Woods Hole Oceanographic Institution: *Communication by peroxidation: A lipid-derived stress response to ultraviolet radiation in the coastal Antarctic.* Primary investigator. $7,000.

2010 The Sounds Conservancy Grant, Quebec-Labrador Foundation. Primary investigator. $500.
Carpenter/Sperry Research Fund, Yale School of Forestry & Environmental Studies. Primary investigator. $1,810.

2009 Yale/Connecticut Sea Grant Student Research Internship. $1,474.

ADVISING AND MENTORSHIP

2018	Primary supervisor and mentor to UW undergraduate research assistant Erin Horn
2015	Primary supervisor, WHOI summer Guest Student Gabriel Roy Liguori (Yale University)
2014 – 2016	Peer mentor, MIT/WHOI Joint Program Student Kevin Sutherland
2013 – 2014	Mentor and field supervisor, PAL-LTER Field Team Member Sebastian Vivancos (Columbia University)

CRUISE PARTICIPATION AND FIELD EXPERIENCE

Oct-Dec 2017	Palmer Station, Antarctica: Co-investigator and Field Team Member, NSF-supported research project (NSF-PLR 1543328) on lipid photooxidation in West Antarctica.
Oct-Dec 2015	Palmer Station, Antarctica: Field Team Member, Palmer Long Term Ecological Research (LTER) study. Conducted field operations and laboratory analysis for microbial/biogeochemical component of NSF LTER study. Operator of Zodiac small boats for sample collection.
Jul-Aug 2015	*R/V KA'IMIKAI-O-KANALOA*, Station Aloha, North Pacific Ocean, 11 days: Simons Collaboration on Ocean Processes and Ecology (SCOPE)
Sep 2014	*R/V CLIFFORD BARNES*, Clayoquot Sound, British Columbia, 8 days
Jan-Feb 2014	*R/V LAURENCE M. GOULD*, Bellingshausen Sea (West Antarctica), 35 days as part of Palmer LTER study cruise
Oct-Dec 2013	Palmer Station, Antarctica: Field Team Leader, Palmer LTER study.
June-July 2012	*R/V KNORR*, North Atlantic Ocean, 35 days: Ponta Delgada, Azores, to Reykjavik, Iceland

April-May 2012	*R/V KNORR*, North Atlantic Ocean, 14 days: Woods Hole, MA, to Bermuda
December 2010	*M/V SARAH BORDELON*, Northern Gulf of Mexico, 11 days: NOAA/ Deepwater Horizon Cooperative Cruise, site of Deepwater Horizon wellhead
2009-2011	Yale/Peabody Marine Station, Guilford, CT: Managed marine research operations on Long Island Sound for laboratory of Dr. Peter Raymond and six other investigators; over 40 day cruises on Long Island Sound and Connecticut River as U.S. Coast Guard licensed operator of 23-foot research boat *R/V CATCH THE JOY*

PRESENTATIONS AT MEETINGS

J. R. Collins, H. F. Fredricks, J. S. Bowman, C. P. Ward, C. Moreno, K. Longnecker, A. Marchetti, C. M. Hansel, H. W. Ducklow, and B. A. S. Van Mooy. February 2018. Photooxidation of membrane lipids in marine plankton: A biogeochemically significant process for carbon turnover in coastal surface waters of West Antarctica. *Oral presentation.* Ocean Sciences Meeting, Portland, OR.

C. P. Laber, J. E. Hunter, A. F. Carvalho, **J. R. Collins**, E. Hunter, B. Schieler, E. Boss, K. More, M. Frada, K. Thamatrakoln, C. Brown, C. M. L. Haramaty, J. E. Ossolinski, H. F. Fredricks, J. I. Nissimov, R. Gardella, U. Sheyn, Y. Lehahn, R. J. Chant, A. M. Martins, M. J. L. Coolen, A. Vardi, G. R. DiTullio, B. A. S. Van Mooy, and K. D. Bidle. Coccolithovirus infection enhances vertical carbon flux in the North Atlantic. *Oral presentation.* Ocean Sciences Meeting, Portland, OR.

J. M. Fulton, P. Herckes, M. P. Fraser, **J. R. Collins**, and B. A. S. Van Mooy. December 2017. Microbial biomarkers for native and agricultural soil inputs to atmospheric particulate matter. *Poster.* American Geophysical Union Fall Meeting, New Orleans, LA.

J. S. Bowman, **J. R. Collins**, R. Gast, C. M. Hansel, B. A. S. Van Mooy, and H. W. Ducklow. July 2017. Patterns in microbial gene expression during the transition from winter to spring along the western Antarctic Peninsula. *Oral presentation.* SCAR Biology Symposium, Scientific Committee on Antarctic Research, Leuven, Belgium.

Becker, K. W., **J. R. Collins**, H. F. Fredricks, J. E. Ossolinski, A. E. White, D. J. Repeta, and B. A. S. Van Mooy. February 2017. The microbial lipidome of the oligotrophic North Pacific Subtropical Gyre. *Oral presentation.* ASLO Aquatic Sciences Meeting, Honolulu, HI.

Collins, J. R., B. R. Edwards, K. W. Becker, H. F. Fredricks, and B. A. S. Van Mooy. January 2017. Discovery and identification of oxidative stress biomarkers in marine phytoplankton using a new, open-source R package for lipidomics. *Poster.* Winter meeting of the Federation of Earth Science Information Partners (ESIP), Bethesda, MD.

Collins, J. R., B. R. Edwards, K. W. Becker, H. F. Fredricks, and B. A. S. Van Mooy. December 2016. Putting the oxylipidome to work: The R-based LOBSTAHS lipidomics software reveals candidate biomarkers for stress in plankton. *Poster.* Annual meeting of the Simons Collaboration on Ocean Processes & Ecology (SCOPE), New York, NY.

Collins, J. R., B. R. Edwards, H. F. Fredricks, and B. A. S. Van Mooy. August 2016. Discovery & identification of oxidative stress biomarkers in marine microbes using LOBSTAHS, a new R package for lipidomics. *Poster.* 16th International Symposium on Microbial Ecology (ISME16), Montreal, Canada.

Collins, J. R., B. R. Edwards, H. F. Fredricks, and B. A. S. Van Mooy. January 2016. Discovery and identification of biomarkers for oxidative stress in phytoplankton using LOBSTAHS, a new pipeline for semi-untargeted lipidomics. *Poster.* EMBO/EMBL Symposium: A New Age of Discovery for Aquatic Microeukaryotes, European Molecular Biology Laboratory, Heidelberg, Germany.

Becker, K. W., H. F. Fredricks, **J. R. Collins**, J. E. Ossolinski, J. Wingenroth, D. J. Repeta, D. A. Caron, S. W. Chisholm, and B. A. S. Van Mooy. May 2016. The microbial lipidome of subtropical Pacific surface waters dominated by *Prochlorococcus*. *Poster.* 12th Workshop on Cyanobacteria, Arizona State University, Tempe, AZ.

Fredricks, H. F., **J. R. Collins**, B. R. Edwards, and B. A. S. Van Mooy. June 2015. Lipidomics of marine microorganisms under stress: Solving the needle / haystack problem with a large database and open-source software. *Poster.* Annual Conference, American Society for Mass Spectrometry, St. Louis, MO.

Collins, J. R., H. F. Fredricks, H. W. Ducklow, and B. A. S. Van Mooy. February 2015. Photochemical production of oxylipin infochemicals in West Antarctica: An approach using new tools for semi-untargeted lipidomics. *Poster.* ASLO Aquatic Sciences Meeting, Granada, Spain.

Edwards, B. R., **J. R. Collins**, H. F. Fredricks, J. E. Ossolinski, H. McNair, M. A. Brzezinski, J. W. Krause, K. Thamatrakoln, K. D. Bidle, and B. A. S. Van Mooy. February 2015. Comparative lipidomics link bloom decline to infochemical production in the California upwelling zone. *Oral presentation.* ASLO Aquatic Sciences Meeting, Granada, Spain.

Collins, J. R., B. R. Edwards, K. Thamatrakoln, J. E. Ossolinski, G. R. DiTullio, S. C. Doney, and B. A. S. Van Mooy. July 2014. Constraints on observationally intractable aspects of the mesopelagic carbon cycle: Comparison of direct observations and results from multi-parameter sensitivity analyses. *Poster.* Ocean Carbon and Biogeochemistry Workshop, Woods Hole, MA.

Collins, J. R., J. E. Ossolinski, B. R. Edwards, K. Thamatrakoln, J. Tagliaferre and B. A. S. Van Mooy. February 2014. Constraining carbon cycle parameters in the North Atlantic through independent measurements of bacterial production, respiration, and particulate carbon export. *Poster.* Ocean Sciences Meeting, Honolulu, HI.

Fulton, J. M., B. A. S. Van Mooy, **J. R. Collins**, J. E. Hunter, and K. Bidle. February 2014. Lipid connections between viral termination of coccolithophore blooms and carbon export. *Poster.* Ocean Sciences Meeting, Honolulu, HI.

Collins, J. R., J. R. Valdes, J. E. Ossolinski, R. G. Keil, and B. A. S. Van Mooy. February 2013. The *PHORCYS*: An autonomous, dual-chamber *in situ* incubator for the estimation of community metabolism. *Oral presentation.* ASLO Aquatic Sciences Meeting, New Orleans, LA.

Collins, J. R., P. A. Raymond, W. F. Bohlen, and M. M. Howard-Strobel. November 2011. Metabolism in central Long Island Sound, minute by minute: Estimates from *in situ* oxygen and nitrate measurements. *Poster.* Coastal and Estuarine Research Federation (CERF) Biennial Conference, Daytona Beach, FL.

Collins, J. R., and P. A. Raymond. April 2011. Controls on nutrient flux and productivity over multiple time scales in Long Island Sound. *Poster.* Master's Student Colloquium, 2011, Yale School of Forestry & Environmental Studies, New Haven, CT.

PUBLICATIONS (NON-REFEREED)

Collins, J.R. 2010. YIBS Center for Field Ecology: Long Island Sound project. *Yale Environmental News*, Yale Institute for Biospheric Studies **15** (2): 27.

Collins, J. R. 2010. Community respiration in coastal Connecticut: How fast does an aquatic ecosystem breathe? *News of the Center for Coastal and Watershed Systems*, Yale School of Forestry & Environmental Studies, Spring 2010: 4-5.

LECTURES AND TALKS FOR GENERAL AUDIENCES

Collins, J.R. May 2014. "Anthropogenic impacts in coastal environments: Long Island Sound and the West Antarctica Peninsula." Lecture to members of Pittsburgh, PA, chapter, World Presidents' Organization.

Collins, J. R. August 2011. "Two months in Mobile: A Coast Guard Reservist's reflections on the Deepwater Horizon oil spill." MIT/WHOI Joint Program "Jelly Talk," Woods Hole Oceanographic Institution, Woods Hole, MA.

Collins, J. R. May 2011. "Oil, water, boom, and beaches: Select aspects of the Deepwater Horizon disaster." Two special lectures to high-school students. Bridgeport Regional Aquaculture Science and Technology Education Center, Bridgeport, CT.

PROFESSIONAL ASSOCIATIONS

2018 – Member, Geochemical Society
2015 – Member, The Oceanography Society
2011 – Member, American Society of Limnology & Oceanography (ASLO)
2009 – Member, American Geophysical Union (AGU)
2009 – Member, Coastal & Estuarine Research Federation (CERF)

RELEVANT ADDITIONAL SCIENTIFIC TRAINING

2013 Algal Culturing Techniques Course, Provasoli-Guillard National Center for Marine Algae and Microbiota (NCMA). Bigelow Laboratory for Ocean Sciences, East Boothbay, ME.

2009 *In Situ* Water Quality Sensor Workshop, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI) and United States Geological Survey (USGS). University of Vermont, Burlington, VT.

EXTRACURRICULAR ACTIVITIES AND VOLUNTEER SERVICE

2016 – 2017 Co-President, Boston Chapter, Yale Veterans Association
2013 – 2015 Student representative, Institutional Safety Committee, Woods Hole Oceanographic Institution
2012 – 2013 Science education outreach volunteer, Charlestown High School, Boston, MA
2012 – 2015 Librarian, John W. Farrington Collection, Woods Hole Oceanographic Institution
2011 – 2013 Steering Committee member, Yale Veterans Association
2010 – 2011 President, Fresh & Salty (student organization for water science and policy, Yale School of Forestry & Environmental Studies)
2010 – 2011 Communications Chair, Yale Veterans Council
2010 – 2011 Graduate Affiliate, Berkeley College, Yale University
2009 – 2011 Student member, Environmental Stewardship Committee, Yale School of Forestry & Environmental Studies
2005 – Undergraduate admissions interviewer (volunteer), Yale Alumni Schools Committee
2003 – 2004 Managing Editor, Yale Daily News (Yale College)

MILITARY SERVICE

Current rank: LCDR/O-4
Branch of service: U.S. Coast Guard Reserve (2009 to present)

U.S. Coast Guard (2004-2009)
Date of rank: 1 September 2015

PROFESSIONAL CREDENTIALS & SKILLS

Commercial master's license (U.S. Coast Guard): Master of Steam or Motor Vessels, 100 Tons (Near Coastal), with Assistance Towing Endorsement; issued April 2016

Current certifications: BLS-CPR/Advanced First Aid (American Heart Association); OSHA 40-hour HAZWOPER; Critical Incident Stress Management (CISM) counselor; American Institute for Avalanche Research and Education (AIARE) Level 1 Avalanche Safety; Glacier Travel and Crevasse Rescue (University of Washington Outdoor Education)

National Incident Management System (NIMS) Incident Command System (ICS) qualifications (Type 3, U.S. Coast Guard): Operations Section Chief; Situation Unit Leader; Division/Group Supervisor. U.S. Coast Guard courses: 300, 339, 341, 345, 346, 347, 400, 430/440. FEMA courses: 100, 200, 700, 800, L0950 (All-Hazards Incident Commander).

U.S. Coast Guard professional education and qualifications: U.S. Coast Guard Pollution Incident Response (Yorktown, VA); U.S. Coast Guard Boarding Officer and Radiation Detection Level 2 Operator (Federal Law Enforcement Training Center, Charleston, SC); Northeast Fisheries Boarding Officer (U.S. Northeast Regional Fisheries Training Center, Falmouth, MA); Maritime Search & Rescue Planning, National Search and Rescue School (Yorktown, VA); Reserve Components National Security Course, National Defense University (Washington, DC)

Languages: French (fluent); Spanish (proficient); Haitian Creole (conversational)