

# JAN R. WESSEL, Ph.D. CURRICULUM VITAE (March 2017)

Assistant Professor

Dept. of Psychological and Brain Sciences & Dept. of Neurology, University of Iowa

Born June 14<sup>th</sup>, 1984 in Heinsberg, Germany

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## PROFESSIONAL CAREER

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Oct. 2015 - **Assistant Professor (tenure-track)**  
Department of Neurology, University of Iowa  
Department of Psychological & Brain Sciences, University of Iowa

Oct. 2011 - Sept. 2015 **Postdoctoral Research Employee & Assistant Project Scientist**  
Psychology Department, University of California, San Diego

May 2011 - Aug. 2011 **Postdoctoral Research Scholar**  
Max Planck Institute for Neurological Research, Cologne

Oct. 2010 - Dec. 2010 **Visiting Scholar**  
Swartz Center for Computational Neuroscience, San Diego

Oct. 2008 - Sept. 2010 **Adjunct Lecturer**  
Psychology Department, University of Cologne

Oct. 2008 - May 2011 **Doctoral Student**  
Max Planck Institute for Neurological Research, Cologne

July 2007 - Sept. 2008 **Research Assistant**  
Max Planck Institute for Neurological Research, Cologne

Feb. 2007 - April 2007 **Research Assistant**  
Institute for Systems Neuroscience, Hamburg

Oct. 2006 - Sept. 2007 **Student Lecturer (Tutor) & Research Assistant**  
Psychology Department, University of Cologne

## OTHER PROFESSIONAL AFFILIATIONS

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2016 - Interdisciplinary Graduate Program in Neuroscience, U. of Iowa  
2016 - Iowa Informatics Initiative, University of Iowa  
2016 - Behavioral Biomedical Training Program, University of Iowa  
2015 - Aging Mind and Brain Initiative, University of Iowa

## UNIVERSITY EDUCATION

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Oct. 2008 - May 2011 **Ph.D. (Dr. phil.), *summa cum laude* (highest honors)**  
Cognitive Neurology; Max Planck Institute for Neurological Research

Oct. 2004 - Sept. 2008 **B.Sc. & M.Sc. (Diplom), *with distinction* (highest honors)**  
Psychology; University of Cologne

## CIVILIAN SERVICE

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July 2003 - April 2004 **Emergency Medical Technician**  
German Red Cross, Heinsberg, Germany

**GRANT SUPPORT**

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## COMPLETED

- Aging Mind & Brain Initiative Pilot Grant (Role: PI)** **\$25,000**  
 2016 Wessel (PI) 01/01/16 – 12/31/16  
 The influence of conscious error detection on impaired cognitive control in older age  
Goal: To test whether deficits in conscious error detection can explain age-related decline in cognitive control.
- NIH/NIDA R03 B/Start (Role: PI)** **\$116,250**  
 R03 DA035874 Wessel (PI) 06/01/14 – 03/31/16  
 Motoric stopping as an intervention to reduce the value of rewarding stimuli  
Goal: To probe the utility of a stop-signal treatment in the devaluation of reward-associated stimuli in the context of smoking cessation.
- NIH/NINDS R21 (Role: Co-PI)** **\$352,940**  
 R21 NS085543 Aron (PI) 12/01/13 – 11/30/15  
 How stopping movement affects working memory  
Goal: To investigate the potential detrimental influence of activity induced in the brain's stopping network on ongoing working memory representations.
- Kavli Institute for Mind and Brain (Role: PI)** **\$30,000**  
 2012-022 Wessel (PI) 05/01/12 – 04/30/13  
 Parsing brain networks for self-control using simultaneous EEG-fMRI  
Goal: To isolate distinct brain networks for working memory and inhibitory control and investigate their interaction when stopping goals have to be encoded and retrieved.
- Gertrud Reemtsma Foundation (Role: Scholarship Recipient)** **€57,000 (~\$80,000)**  
 2008 Wessel (PI) 11/01/08 – 08/31/11  
 Cognitive and Somatic Components of Conscious Error Perception  
Goal: To investigate the neuronal and behavioral underpinnings that lead to subjective error perception and / or – blindness.
- Gustav Lienert Foundation (Role: PI)** **€3,200 (~\$4,400)**  
 2010 Wessel (PI) 10/10/10 – 12/04/10  
 Automatic identification of independent components underlying event-related brain potentials  
Goal: To develop a method and algorithm for the data-driven identification of independent components underlying event-related brain potentials.

**JOURNAL PUBLICATIONS**

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27. **Wessel JR** (in press). Prepotent motor activity and inhibitory control demands in different variants of the Go/Nogo paradigm. *Psychophysiology*
26. **Wessel JR, Aron AR** (2017). On the globality of motor suppression: unexpected events and their influence on behavior and cognition. *Neuron* 93(2): 259–280
25. **Wessel JR** (in press). A neural mechanism for surprise-related interruptions of visuospatial working memory. *Cerebral Cortex*

24. **Wessel JR**, Ghahremani A, Udupa K, Saha U, Kalia SK, Hodaie M, Lozano AM, Aron AR, Chen R (2016). Stop-related subthalamic beta activity indexes global motor suppression in Parkinson's Disease. *Movement Disorders* 31(12):1846-1853
23. **Wessel JR**, Jenkinson N, Brittain JS, Voets SE, Aziz T, Aron AR (2016). Surprise disrupts cognition via a fronto-basal ganglia suppressive mechanism. *Nature Communications* 7:11195
22. **Wessel JR** (in press). Testing multiple psychological processes for common neural mechanisms using EEG and independent component analysis. *Brain Topography*
21. **Wessel JR**, Ullsperger M, Obrig H, Villringer A, Quinque E, Schroeter ML, Bretschneider KL, Arelin K, Roggenhofer E, Frisch S, Klein TA (2016). Neural synchrony indexes impaired motor slowing after errors and novelty following white-matter damage. *Neurobiology of Aging* 38:205-13
20. **Wessel JR**, Myers MG, Lewis CM, Aron AR (in press). Using motor stopping to reduce smokers' attentional bias towards smoking-related stimuli. (Stage-1 registered report) *Drug and Alcohol Dependence*
19. **Wessel JR**, Tonnesen A, Aron AR (2015). Stimulus devaluation induced by action-stopping is greater for explicit value representations. *Frontiers in Psychology* 6:1640
18. **Wessel JR**, Aron AR (2015). It's not too late: The onset of the fronto-central P3 indexes successful response inhibition in the stop-signal paradigm. *Psychophysiology* 52(4):472-80
17. **Wessel JR**, O'Doherty JP, Berkebile M, Linderman D, Aron AR (2014). Stimulus devaluation caused by stopping action. *Journal of Experimental Psychology: General* 143(6):2316-29
16. **Wessel JR**, Aron AR (2014). Inhibitory motor control based on complex stopping goals relies on the same brain network as simple stopping. *NeuroImage* 103C:225-234
15. **Wessel JR** (2014). Performance-monitoring in realistic environments: can translating neuroscientific insights augment real-world behavioral adaptation? *The Journal of Neuroscience* 34(27):8934-6
14. **Wessel JR**, Klein TA, Ott DV, Ullsperger M (2014). Lesions to the prefrontal performance-monitoring network disrupt neuronal processing and adaptive behaviors after both errors and novelty. *Cortex* 50, 45-54
13. **Wessel JR**, Conner CR, Aron AR, Tandon N (2013). Chronometric electrical stimulation of right inferior frontal cortex increases motor braking. *The Journal of Neuroscience* 33(50):19611-19619
12. **Wessel JR**, Aron AR (2013). Unexpected events induce motor slowing via a brain mechanism for action-stopping with global suppressive effects. *The Journal of Neuroscience* 33(47): 18481-18491
11. Greenhouse I, **Wessel JR** (2013). EEG signatures associated with stopping are sensitive to preparation. *Psychophysiology* 50(9):900-8
10. **Wessel JR**, Reynoso HS, Aron AR (2013). Saccade suppression exerts global effects on the motor system. *Journal of Neurophysiology* 110(4):883-90
9. Itthipuripat S, **Wessel JR**, Aron AR (2013). Frontal theta is a signature of successful working memory manipulation. *Experimental Brain Research* 224(2): 255-62
8. **Wessel JR**, Danielmeier C, Morton JB, Ullsperger M (2012). Surprise and error: Common neuronal architecture for processing errors and novelty. *The Journal of Neuroscience* 32(22):7528-7537 [Featured Article in "This Week in the Journal"]

7. **Wessel JR** (2012). From "Neural correlates of consciousness" to "Neural causes of consciousness": A commentary on "Consciousness, biology and quantum hypotheses", by Bernard J. Baars and David E. Edelman. *Phys Life Rev.* (3):299-300
6. **Wessel JR** (2012). Error awareness and the error-related negativity: Evaluating the first decade of evidence. *Front. Hum. Neurosci.* 6: 88
5. **Wessel JR**, Haider H, Rose M (2012). The transition from implicit to explicit rule representations in incidental learning situations: More evidence from high-frequency EEG coupling. *Experimental Brain Research* 217 (1): 153 - 162
4. **Wessel JR**, Danielmeier C, Ullsperger M (2011). Error Awareness revisited: Accumulation of multi-modal evidence from central and autonomic nervous systems. *Journal of Cognitive Neuroscience* 23(10):3021-36
3. **Wessel JR**, Ullsperger M (2011). Selection of independent components representing event-related brain potentials: A data-driven approach for greater objectivity. *NeuroImage* 54(3):2105-15
2. Ullsperger M, Harsay H, **Wessel JR**, Ridderinkhof KR (2010). Conscious perception of errors and its relation to the anterior insula. *Brain Structure and Function.* 214 (5-6): 623-643
1. Danielmeier C, **Wessel JR**, Steinhauser M & Ullsperger M (2009). Modulation of the error-related negativity by response conflict. *Psychophysiology.* 46: 1288-1298

#### POSTER PRESENTATIONS

- Wagner J, **Wessel JR**, Ghahremani A, Aron AR - "Frontal beta power increase in scalp EEG as a signature of outright stopping of action", Human Brain Mapping 2017, Vancouver, BC (Canada)
- Lewis CM, Aron AR, **Wessel JR** - "Global motor suppression following action errors is related to post-error slowing and also to error-related interference", Society for Neuroscience 2016, San Diego, CA (USA)
- Udupa K, Ghahremani A, **Wessel JR**, Saha U, Hoque T, Aron AR, Chen R - "Subthalamic nucleus oscillations as predictor of motor cortical excitability measured by transcranial magnetic stimulation", Society for Neuroscience 2016, San Diego, CA (USA)
- Ghahremani A, Udupa K, **Wessel JR**, Saha U, Hoque T, Lozano AM, Hodaei M, Kalia SK, Aron AR, Chen R - "Distinct roles of subthalamic nucleus alpha and beta oscillations in stopping and delaying manual and verbal actions.", Society for Neuroscience 2016, San Diego, CA (USA)
- Ghahremani A, **Wessel JR**, Udupa K, Saha U, Hodaei M, Lozano AM, Kalia SK, Aron AR, Chen R - "Is increased beta band power in the subthalamic nucleus related to global suppression of corticospinal excitability during behavioral response inhibition?", Society for Neuroscience 2015, Chicago, IL (USA)
- Wessel JR**, Aron AR - "Distraction induced by unexpected events may be explained by global suppression", Psychonomics 2014, Long Beach, CA (USA)
- Wessel JR**, Baboyan VG, Tandon N, Aron AR - "Motor slowing following unexpected events: individual roles and functional connectivity of the pre-supplementary motor area and the right inferior frontal cortex", Society for Neuroscience 2014, Washington, DC (USA)
- Wessel JR**, Aron AR - "Unexpected events induce motor slowing via a brain mechanism for action-stopping with global suppressive effects", Society for Neuroscience 2013, San Diego (USA)

- Conner CR, **Wessel JR**, Aron AR, Tandon N - "Direct-electrical stimulation of the right inferior frontal cortex induces motor braking", Society for Neuroscience 2013, San Diego (USA)
- Wessel JR**, Conner CR, Aron AR, Tandon N - "Direct-electrical stimulation of the right inferior frontal cortex induces motor braking", Human Brain Mapping 2013, Seattle (USA)
- Wessel JR**, Huber DE, Aron AR - "Rapidly stopping action decreases working memory capacity", Society for Neuroscience 2012, New Orleans (USA)
- Wessel JR**, Danielmeier C, Morton JB, Ullsperger M - "Surprise and error: Common neuronal architecture for processing errors and novelty. " Human Brain Mapping 2012, Beijing (China)
- Marx C, **Wessel JR**, Endepols H, Graf R, Ullsperger M - "A Cross-Species Simon-task: Comparing conflict and error processing in rats and humans", ICON XI 2011, Mallorca (Spain)
- Bretschneider J, Klein TA, Obrig H, Schroeter M, Villringer A, **Wessel JR**, Frisch S - "Handlungsteuerung bei frontalen Strukturveränderungen" [Performance Monitoring in patients with fronto-cortical structural changes], DGPPN 2011, Berlin (Germany)
- Wessel JR**, Danielmeier C, Ullsperger M - "Error Awareness revisited: Event-related brain potentials and the autonomic nervous system", Human Brain Mapping 2010, Barcelona (Spain)
- Wessel JR**, Ullsperger M - "COMPASS: Automatic Independent Component selection for EEG-fMRI integration", Human Brain Mapping 2010, Barcelona (Spain)
- Wessel JR**, Danielmeier C, Ullsperger M - "Error Awareness revisited: Event-related brain potentials and the autonomic nervous system", Motivational and Cognitive Control, Oxford (UK)
- Wessel JR**, Ullsperger M - "COMPASS: Automatic Independent Component selection for EEG-fMRI integration", Motivational and Cognitive Control 2010, Oxford (UK)
- Danielmeier C, **Wessel JR**, Ullsperger M - "The structural basis of error awareness", Human Brain Mapping 2010, Barcelona (Spain)
- Wessel JR**, Danielmeier C, Ullsperger M - „Conscious Error Detection: Differential autonomic responses and event-related brain potentials“, Annual Meeting of the Society for Psychophysiological Research 2009, Berlin (Germany)
- Danielmeier C, Fischer A, **Wessel JR**, Ullsperger M - „Modulation of the ERN by age and response conflict“, ICON X 2008, Bodrum (Turkey)
- Wessel JR**, Rose M, Haider H - „Electrophysiological Correlates of explicit rule representation in serial reaction time tasks“, IK2008, Günne (Germany)
- Wessel JR**, Rose M, Haider H - „Electrophysiological Correlates of explicit rule representation in serial reaction time tasks“, IOP 2008, St. Petersburg (Germany)

### **COVERAGE IN POPULAR PRESS (selection)**

- Science News:** Hamers, Laurel (2017, March 14). Making a mistake can put your brain on 'pause'. *Science News*. Retrieved March 14, 2017, from [www.sciencenews.org](http://www.sciencenews.org)
- The Dana Foundation:** Sukel, Kayt (2016, Sept. 12). A biophysical theory of beta waves. *Dana Foundation Top Stories*. Retrieved Sept. 12, 2016, from [www.dana.org](http://www.dana.org)
- CBS Radio:** The Osgood File (2016, June 9). Losing our train of thoughts. *Radio interview*. Retrieved June 9, 2016, from [www.theosgoodfile.com](http://www.theosgoodfile.com)

**NBC News:** Fox, Maggie (2016, April 18). Study Finds Where You Lost Your Train of Thought.

*NBC News*. Retrieved April 19, 2016, from [www.nbcnews.com](http://www.nbcnews.com)

**Forbes:** DiSalvo, David (2013, December 15). Study shows that electrical stimulation can boost the brain's brakes. *Forbes*. Retrieved January 7, 2014, from [www.forbes.com](http://www.forbes.com)

**Yahoo News:** IANS (2013, December 16). Apply brain brakes to earn social respect. *Yahoo News*. Retrieved January 7, 2014, from <http://in.news.yahoo.com>

**Forbes:** DiSalvo, David (2013, December 29). The top ten brain science and psychology studies of 2013. *Forbes*. Retrieved January 7, 2014, from [www.forbes.com](http://www.forbes.com)

## HONORS AND AWARDS

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2016	<b>Distinguished Early Career Contributions to Psychophysiology Award</b> Society for Psychophysiological Research
2012	<b>Trainee Abstract Travel Award</b> Organization for Human Brain Mapping
2010	<b>Young Researcher Award</b> Gustav A. Lienert Foundation for Biopsychological Methods
2008	<b>Diploma (M.Sc.) Thesis of the Year</b> Faculty of Life Sciences, University of Cologne, Dept. Psychology
2008 & 2009	<b>Travel Grant</b> German Society for Computer Science

## INVITED TALKS (selection)

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October 2017	<i>Symposium</i> , Society f. Psychophysiological Research, Vienna (Austria)
November 2016	<i>Nanosymposium</i> , Society for Neuroscience, San Diego
September 2016	<i>Symposium</i> (chair), Society f. Psychophysiological Research, Minneapolis
September 2016	<i>Award Address</i> , Society for Psychophysiological Research, Minneapolis
June 2016	<i>Symposium</i> , ESCAN, Porto (Portugal)
February 2016	<i>Workshop</i> , Computational and Systems Neuroscience (CoSyNe), Utah
October 2015	<i>Nanosymposium</i> , Society for Neuroscience, Chicago
March 2015	Scripps Neuroconference, La Jolla
September 2014	<i>Symposium</i> , Society for Psychophysiological Research, Atlanta
June 2014	Institute for Neural Computation, La Jolla
March 2014	University of California Medical School, La Jolla
May 2013	Kavli Institute for Mind and Brain, La Jolla
January 2013	San Diego Neurological Society, San Diego
June 2012	<i>iTalk</i> , Human Brain Mapping Conference, Beijing (China)
September 2010	University of Western Ontario, London (Canada)
October 2009	ODCNA 2009, Amsterdam (Netherlands)
September 2008	<i>Symposium</i> , International Organization for Psychophysiology, St. Petersburg (Russia)

## PROFESSIONAL SERVICE

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*Ad-hoc Journal Reviewing*

Journal of Neuroscience; Brain; Neuroscience and Biobehavioral Reviews; Cerebral Cortex; Biological Psychiatry; Philosophical Transactions of the Royal Society B; NeuroImage; Human Brain Mapping; Psychological Science; Journal of Cognitive Neuroscience; Neurobiology of

Aging; Social Cognitive and Affective Neuroscience; Scientific Reports; Cortex; Psychophysiology; Frontiers in Neuroscience; Journal of Neurophysiology; Biological Psychology; Cognition; Journal of Experimental Psychology: Human Perception and Performance; Brain Topography; Cognitive Psychology; Cognitive, Affective & Behavioral Neuroscience; Psychonomic Bulletin and Review; European Journal of Neuroscience; Neuroscience; Experimental Brain Research; IEEE Transactions on Multimedia; Developmental Science; Neurobiology of Learning and Memory; Neuropsychologia; Attention, Perception & Psychophysics; PLoS One; Psychological Research; Quarterly Journal of Experimental Psychology; Journal of Psychophysiology; Brain and Cognition; Frontiers in Behavioral Neuroscience; Frontiers in Human Neuroscience; Neuroscience Letters; Aging, Neuropsychology & Cognition; Journal of Cognitive Psychology; Advances in Cognitive Psychology; Scandinavian Journal of Psychology

*Grant Reviewing*

National Science Foundation (NCS panel)

US Army Research Office (ad-hoc)

Wellcome Trust (UK, ad-hoc)

*Service to Scientific Societies*

Program Committee, Society for Psychophysiological Research Conference, Vienna 2017

**COMMITTEES, STUDENT ADVISING, UNIVERSITY SERVICE**

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*Graduate students*

Darcy Waller (Psychology & Brain Sciences, 2016 – current), T32-funded student

*Service to the College of Liberal Arts & Sciences*

CLAS 20/20 committee charrette

*Departmental Committee Service*

Technical Support Services Committee (Psychological & Brain Sciences, 2016 – current)

Awards Committee (Neuroscience Graduate Program, 2016 – current)

- Chair: Young Investigator Award (2016)
- Chair: Publication Award (2017)

*Ph.D. Thesis Committee (University of Iowa)*

Rachel Clark (Neuroscience, Advisor: Voss)

Carlos del Rio Bermudez (Psychology, Advisor: Blumberg)

Kayleen Schreiber (Neuroscience, Advisor: McMurray)

Justin Reber (Psychology, Advisor: Tranel)

*Rotating graduate students*

Julian A. Scheffer (Behavioral-Biomedical Interface Program)

*Comprehensive Exam Committee (University of Iowa Graduate Program in Neuroscience)*

Ryan Kelley (Advisor: Narayanan)

Rachel Clark (Advisor: Voss)

James D. Kent (Advisor: Voss)  
 Kayleen Schreiber (Advisor: McMurray)  
 Sarrett McCall (Advisor: McMurray)

*Research Advisory Committee (University of Iowa Graduate Program in Psychology)*

Marcie King (Advisor: Tranel)  
 Tobin Dykstra (Advisor: Hazeltine)

*Iowa Center for Research by Undergraduates (ICRU) scholars*

Kylie Dolan (Junior, Summer 2016)

*Undergraduate Research Practicum (University of Iowa Psychology Undergraduate Program)*

Kylie Dolan, Hailey Billings, Cailey Parker, Isabella Dutra, Carly Rider, Conor Bryant

*Outreach*

Volunteer judge, Eastern Iowa Science and Engineering Fair (2017)

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

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Society for Neuroscience  
 Organization for Human Brain Mapping  
 Society for Psychophysiological Research  
 German Society for Cognitive Science  
 Psychonomic Society

**TEACHING**

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UNIVERSITY OF IOWA

Semester	Advisees		Courses taught		ACE scores*		
	<i>Underg.</i>	<i>Grad.</i>	<i>Number / Title</i>	<i>#</i>	<i>IE</i>	<i>AE</i>	<i>SS</i>
Sp. 2016	3	0	PSY4020: Laboratory in Psychology	14	5.8	5.8	5.9
Fa. 2016	6	1					
Sp. 2017	5	1	PSY2701: Intro to Behavioral Neuroscience	230			

*\*IE: Instructor efficiency; AE: Assignment efficiency; SS: Student support; Scale 1-6; Measure: Median*

ADJUNCT LECTURER (University of Cologne)

SS 2010                      Statistics using SPSS  
 WS 2009                      Research Methods and Statistics for Diploma Students  
 SS 2009                      Experimental Psychology Laboratory (2 courses)  
 WS 2008 / 2009              Methods of Cognitive Neuroscience  
 WS 2008 / 2009              Research Methods and Statistics for Diploma Students

UNDERGRADUATE LECTURER (Supplementary Instruction, University of Cologne)

SS 2007                      Inferential Statistics  
 WS 2006 / 2007              Experimental Methods and SPSS

OTHER PROFESSIONAL TEACHING



- October 2017 Organizer & instructor, "Advancements in EEG: How new analysis methods enable insights in cognitive neuroscience", Society for Psychophysiological Research Pre-Conference Workshop, Vienna (Austria)
- November 2013 Instructor, 17<sup>th</sup> EEGLAB Workshop, San Diego (USA)
- July 2011 2-hour instructive talk about "The Neuroscience of Learning and Memory" at the teacher training college, Kleve (Germany)
- January 2011 2-day instructive workshop: "EEG analysis", Max Planck Institute for Human Cognitive & Brain Sciences, Leipzig (Germany)
- November 2010 Instructor, 12<sup>th</sup> EEGLAB Workshop, San Diego (USA)
- September 2010 3-hour instructive workshop: "Independent Component Analysis: Theory and Practice", University of Western Ontario (Canada)