Received: 13 January 2020 | Accepted: 14 January 2020

DOI: 10.1111/psyp.13536

SPR DCA AWARD 2019

PSYCHOPHYSIOLOGY SPR WILEY

For distinguished contributions to psychophysiology: Monica Fabiani and Gabriele Gratton

Bruce D. Bartholow

Department of Psychological Sciences, University of Missouri, Columbia, MO, USA

Correspondence
Bruce D. Bartholow, Department of Psychological Sciences, 210 McAlester Hall, University of Missouri, Columbia, MO 65211, USA.
Email: bartholowb@missouri.edu

Funding information
Preparation of this article was supported by grant R01 AA025451 from the National Institute on Alcohol Abuse and Alcoholism.

Since 1969, when the first two awards were conferred on founding members Chester Darrow and R.C. Davis, the Society for Psychophysiological Research (SPR) has recognized the outstanding and sustained contributions of some of its most prominent members with the society's highest honor, the Award for Distinguished Contributions to Psychophysiology. In the 60-year history of SPR, only 36 individuals have been so honored, and never in its history had SPR conferred its highest honor upon a married couple. That changed in 2019, when it was my honor to present the Award for Distinguished Contributions to Psychophysiology to Drs. Monica Fabiani and Gabriele Gratton (Figure 1), during SPR's 59th annual meeting in Washington, DC.

As Gabriele noted during the remarks he made when accepting his award, nearly 25 years ago, he and Monica made a deliberate decision to share a lab and pursue their scholarly interests as a team. Their joint scholarly efforts are reflected in their shared lists of publications[1] and awarded grants. At the time when their awards were conferred, the name "Fabiani" had occurred 416 times on Gabriele's CV, whereas the name "Gratton" had appeared 447 times on Monica's CV. It makes sense, therefore, that they received this award together, as one reflection of their joint dedication to outstanding theoretical and methodological contributions in psychophysiology. Together, Monica and Gabriele provide a prime example of a Gestalt—their combined whole is much greater than the sum of its parts.

As is often the case with Distinguished Contribution awardees, it is challenging to sufficiently represent in a brief article the great depth and breadth of Monica's and Gabriele's contributions to the field and to SPR. Both together and as individual scholars, they have made numerous, transformative discoveries concerning the architecture of cognitive functioning, how this architecture changes with advancing age, and how the functioning brain gives rise to the mind and behavior. Even very early in their careers, Monica and Gabriele made very impactful scholarly contributions. For example, as a first-year graduate student, Monica performed some of the first experiments demonstrating a neurophysiological signature—in the amplitude of the P3/P300 component of the event-related potential (ERP)—of memory encoding, showing that items that elicited a larger P300 at encoding were more likely to be remembered during a subsequent recall test (see Figure 2) (Fabiani & Donchin, 1995; Fabiani, Gratton, Chiarenza, & Donchin, 1990; Fabiani, Karis, & Donchin, 1990; Karis, Fabiani, & Donchin, 1984). This demonstration provided key evidence in support of the context updating hypothesis of the functional significance of the P3 component (Donchin & Coles, 1988). These initial experiments have had a lasting and considerable impact on the field, having been cited more than 1,000 times by other scholars.

Over time, Monica has become best known for her pioneering research on normal cognitive aging, particularly for discoveries linking poor cardiorespiratory fitness with the brain atrophy and cognitive decline that typically accompany advancing age (Fletcher et al., 2016; Fabiani, Gordon, et al., 2014). Starting while she was a postdoc at the New York State Psychiatric Institute, working with David Friedman, Monica began a long and systematic program of research aimed at understanding the neurophysiological and cardiovascular foundations of age-related changes in cognitive functioning. Some of her early work in this line of research (Fabiani & Friedman,

[1]A complete list of Monica's and Gabriele's publications to date appears in the online Supporting Information.

FIGURE 1 Gabriele Gratton (left) and Monica Fabiani (right)

1995) showed that older adults' P3 responses in an auditory oddball paradigm differ quite dramatically from those of younger adults, likely reflecting older adults' decreasing ability to maintain representations in working memory. More recently, Monica and her team have provided compelling evidence that age-related cognitive decline is closely linked to cerebral arterial elasticity (Tan et al., in press). Specifically, older adults whose cerebral arteries are relatively stiff, a symptom of poor cardiorespiratory fitness, show more white matter lesions—which in turn are associated with greater decline in cognitive abilities. This work provides one of the first demonstrations of a neuroanatomical mechanism linking poor cardiovascular fitness, cerebrovascular health, and cognitive decline in normal aging. Moreover, this study showcases a novel measure of cerebral elasticity that Monica and Gabriele recently developed—the pulse relaxation function with diffuse optical tomography (Fabiani, Low, et al., 2014).

Gabriele, too, has made seminal contributions from the very beginning of his career. In fact, his first-ever scholarly publication (Gratton, Coles, & Donchin, 1983), written before he had entered graduate school (more on that later) and describing a "new" (at the time) method for removal of eye-movement artifacts from EEG recordings, remains one of the most impactful articles in all of psychophysiology, having accrued more than 4,600 citations as of this writing. The reason for this article's huge impact is clear—the technique it described was nothing short of transformative for EEG and ERP researchers. Prior to the introduction of Gratton et al.'s eye-movement correction procedure (EMCP), the primary method for handling blinks and other eye-movement artifacts was to simply discard any trials containing such artifacts. This commonly resulted in significant data loss, among other problems. The EMCP revolutionized not only offline post-processing of EEG data, but also data collection procedures, in that participants no longer need to be instructed not to blink or move their eyes during experiments, which can be particularly difficult in some tasks (e.g., visual search) and for some participants (e.g., children).

A few years later, by then also a graduate student, Gabriele began to establish a program of research on cognitive control and its neural underpinnings that continues to this day (Gratton, 2018). During this period, Gabriele made a name for himself, so to speak, by publishing two articles that have become most closely associated with him, describing effects that now bear his name. The first of these (Gratton, Coles, Sirevaag, Eriksen, & Donchin, 1988) reported the first neurophysiological evidence that response conflict, such as that caused by response-incompatible stimuli in a flanker task (Eriksen & Eriksen, 1974), is tied to subthreshold activation of incorrect response channels in the motor cortex, which delays the activation and execution of the correct response. In the EEG, this subthreshold response activation appears as a momentary deflection, or dip, in the lateralized readiness potential (LRP) waveform, indicating partial activation of an incorrect response (e.g., the left-hand response when the correct target identification requires a right-hand response) (see Figure 3). This effect, known as the "Gratton dip," has been replicated numerous times in paradigms ranging from attention control (Heitz & Engle, 2007; Vallesi, Mapelli, Schiff, Amodio, & Umiltà, 2005) to affective decision-making (Frame, Johnson, & Thomas, 2018) to cognitive-behavioral therapy for tic disorder (Morand-Beaulieu, O'Connor, Sauvé, Blanchet, & Lavoie, 2015), to name just a few. The lasting impact of this discovery is evident in the large number—nearly 1,000 as of this writing—and recency—more than 20 times in 2019—of citations Gratton et al. (1988) has received.

Most researchers can only dream of contributing a so-called "citation classic" in their field, defined in Psychology as a publication cited 1,000 times or more by other scholars (Nosek et al., 2010). The article describing the other effect that bears Gabriele's name (Gratton, Coles, & Donchin, 1992) marks his third such contribution to date, having been cited nearly 1,600 times as of this writing. That article describes a set of experiments showing that the so-called "compatibility effect" in response behavior—faster and more accurate responses to compatible (i.e., low-conflict) versus incompatible (i.e., high-conflict) stimulus arrays in conflict paradigms, like the Stroop and Flanker tasks—varies according to (a) the overall probability of high-conflict trials, (b) whether the subject is lead to expect that an upcoming trial is likely to include conflict, and (c) whether or not conflict was present in the previous trial. The latter finding, observed as a larger compatibility effect when the previous trial was compatible than when it was incompatible, has come to be known as the *conflict adaptation effect*, or simply, the "Gratton effect" (see

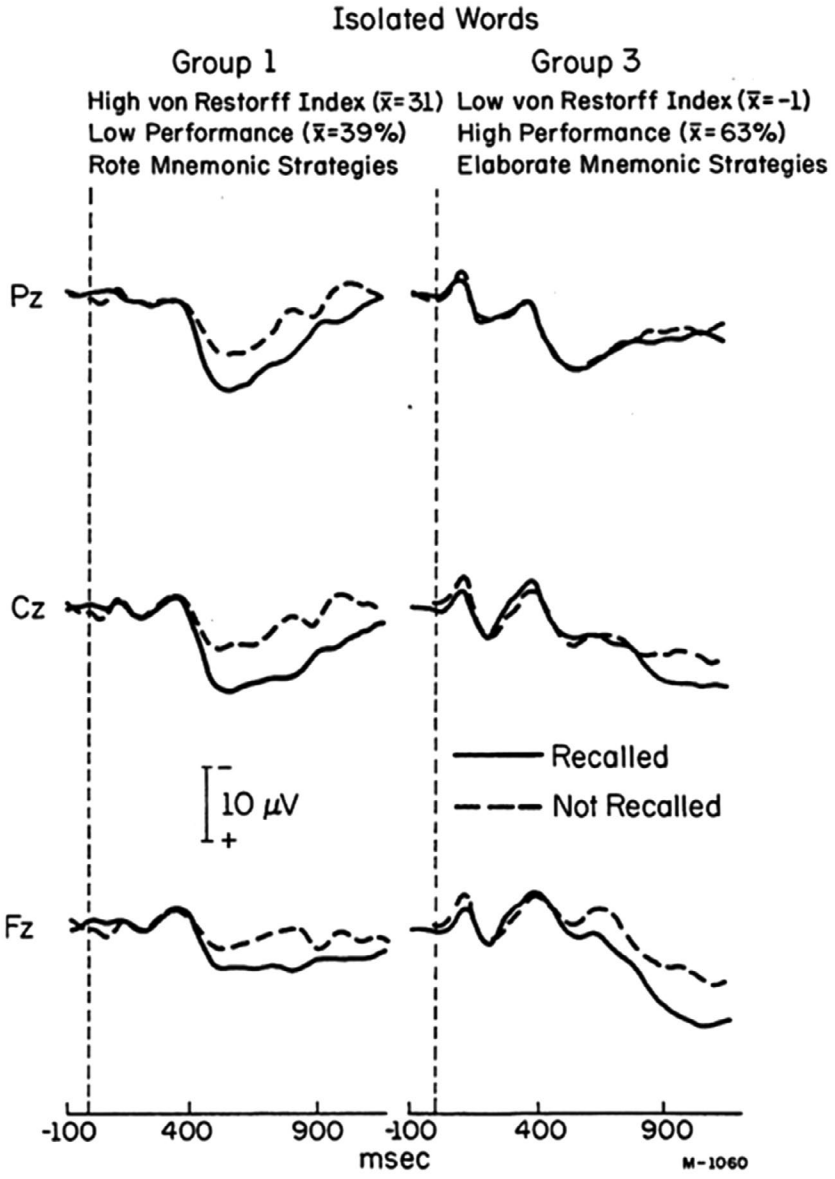

FIGURE 2 P300 amplitude at encoding predicts whether a word will be recalled or not, but only for rote memorizers. A later positive slow wave with a frontal scalp distribution predicts subsequent memory for individuals using more elaborate mnemonic strategies. From Karis et al. (1984)

Figure 4) (Botvinick, Nystrom, Fissell, Carter, & Cohen, 1999; Egner & Hirsch, 2005; Shitova, Roelofs, Schriefers, Bastiaansen, & Schoffelen, 2017; Van Maanen & Van Rijn, 2010). This finding has generated an enormous amount of interest among theorists, particularly proponents of the conflict-monitoring theory of cognitive control (Botvinick, Carter, Braver, Barch, & Cohen, 2001; Carter et al., 1998; Clayson & Larson, 2011; Kerns et al., 2004; Ullsperger, Bylsma, & Botvinick, 2005). Over time, some researchers have articulated boundary conditions for the effect (Akçay & Hazeltine, 2008; Blais, Stefanidi, & Brewer, 2014; Von Gunten, Volpert-Esmond, & Bartholow, 2018), whereas others have argued that the effect is not due to conflict adaptation at all (Mayr, Awh, & Laurey, 2003; Schmidt, 2013; Schmidt & De Houwer, 2011). Whatever one's perspective, there is no doubt that Gratton et al. (1992) has left a lasting legacy in the literature on cognitive control.

Monica's and Gabriele's substantive contributions to cognitive neuroscience and aging have been accompanied by transformative methodological contributions. In addition to various data processing techniques, such as the EMCP (Gratton et al., 1983) and a bespoke EEG acquisition and data processing system known as PANDORA, arguably the most important of these is their development of the event-related optical signal, or EROS, for use in cognitive neuroscience (Gratton & Fabiani, 2001; Gratton, Sarno, Maclin, Corballis, & Fabiani, 2000). One of several optical brain imaging techniques, EROS is based on the known properties of photons scattering as light passes through neural tissue, and the fact that near-infrared light diffuses more when the neurons through which it passes are active compared to passive (Hill & Keynes, 1949; Rector, Yao, George, & Harper, 2009). EROS combines the spatial resolution of functional magnetive resonance imaging (fMRI) with the unrivaled temporal

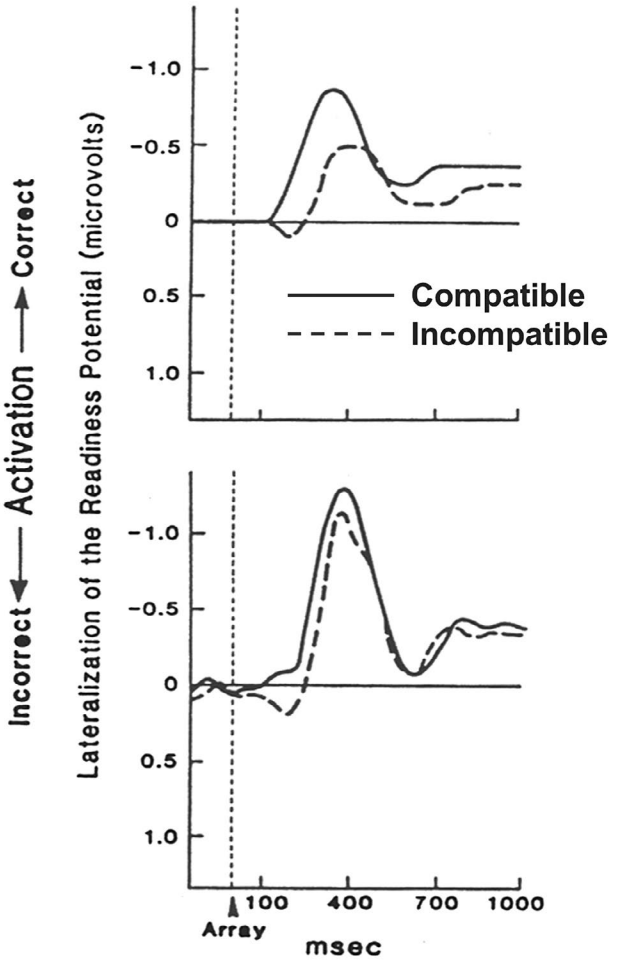

FIGURE 3 ERP waveforms showing the lateralized readiness potential (LRP) following stimulus (array) onset, averaged separately for all compatible and incompatible flanker trials (upper panel), and for trials for which participants made correct responses with a response latency between 300 and 349 ms. The small "dip" in the LRP for incompatible stimulus arrays between stimulus onset and approximately 200 ms, indicating partial activation of the incorrect response in motor cortex, has become known as the "Gratton dip." Adapted from Gratton et al. (1988)

resolution of ERPs, making it an ideal tool for noninvasive measurement of cortical activity supporting higher order cognitive functions (Figure 5).

It is exceptionally rare for scientists to develop an entirely new method for measurement of key constructs in their field. Most of us simply utilize the tools that are available to us. To develop an entirely new way of measuring the functioning of the human brain in real time, especially early in one's career, when such endeavors are particularly risky, is truly extraordinary. In recent years, Monica and Gabriele have expanded the capacity of diffuse optical imaging to also characterize neurovascular health, especially arterial stiffness (Fabiani, Low, et al., 2014; Tan et al.,), a technique for which they and their longtime collaborators, Kathy Low and Ed Maclin, hold a patent (Gratton, Fabiani, Low, & Maclin, 2015).

Monica's and Gabriele's contributions to SPR also have been considerable. They both joined SPR in 1981 and attended their first SPR meeting that same year, in Washington, DC. Since then, both have served on the Board of Directors, both have been SPR President, and both have Chaired and served on numerous committees. In 1997, Gabriele received SPR's Award for Distinguished Early Career Contributions to Psychophysiology. Most recently, Monica has had a very important impact on SPR by serving as Editor of *Psychophysiology*, the Society's official journal. During her editorial term, Monica has overseen a nearly 30% increase in submissions and a significant increase in the journal's impact factor, which in 2018 rose to 3.38.

1 | A BRIEF BIOGRAPHY OF FUTURE DISTINGUISHED SCIENTISTS

That Monica and Gabriele would one day make numerous and distinguished contributions to psychophysiology perhaps is not surprising when one considers their pedigrees. Both were raised in families that highly valued education, particularly in science. Monica was born in 1957 in the town of Pisa in Italy—home of the leaning tower, and birthplace of Galileo. Monica was raised in Frascati (near Rome), because her father, Dino Fabiani, was a technician who repaired particle accelerators at the National Laboratory of Frascati (LNF). Gabriele was born in 1956 in Argentina to Italian parents. His father, Livio Gratton, was an Astrophysicist, trained by Enrico Fermi (creator of the world's first nuclear reactor, at the University of Chicago). Livio had moved his family to Argentina following World War II in pursuit of better opportunities. They returned to Italy in 1960, when Gabriele was three years old, also settling in the town of Frascati, because his father also found work at the LNF.

Monica's interest in brains began while she was eating one. (No, she is not a zombie.) Monica's aunt is a Neurologist, and once at a restaurant they both ordered *cervelli fritti*, which translates directly to "fried [cow] brains." As they dined, Monica's aunt proceeded to dissect her meal and explain to her the various neural structures and their functions. Monica's interest in brains was solidified then, although she has never eaten another one.

Monica and Gabriele first became friends when Monica's best friend began dating one of Gabriele's older brothers. Monica and Gabriele remained "just friends" until a group camping trip, when they were in their late teens, during which the two of them got food poisoning. They spent a romantic evening vomiting next to one another in the woods. As Monica explained it to me, "If you can find someone likable and interesting after a night of vomiting, that is a good sign for long-term relationship potential."

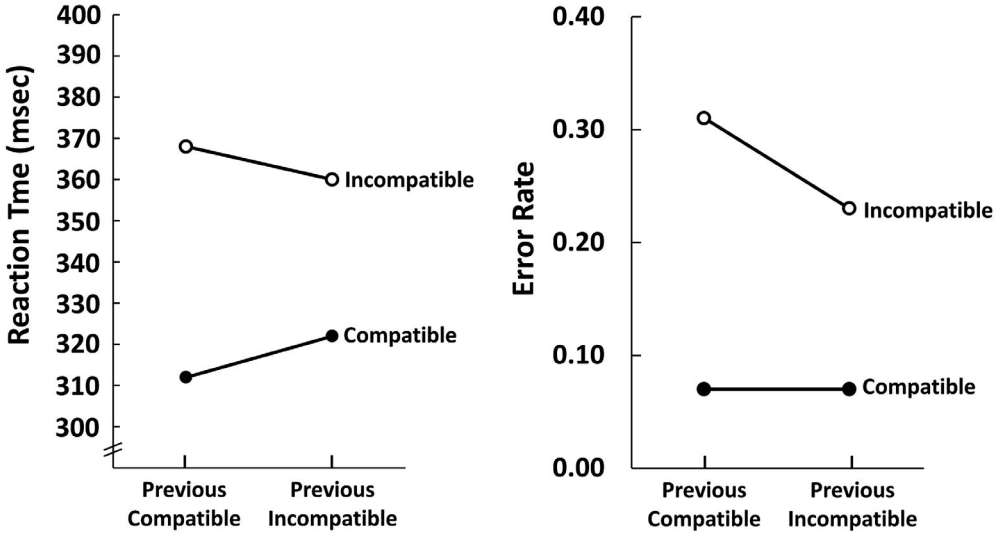

FIGURE 4 Response time (left panel) and error rates (right panel) for compatible and incompatible flanker arrays, as a function of whether the array presented in the previous trial was compatible or incompatible. The difference in the so-called compatibility effect on trials that follow incompatible versus compatible arrays is known as the conflict adaptation effect, or more simply, as the "Gratton effect." Adapted from Gratton et al. (1992)

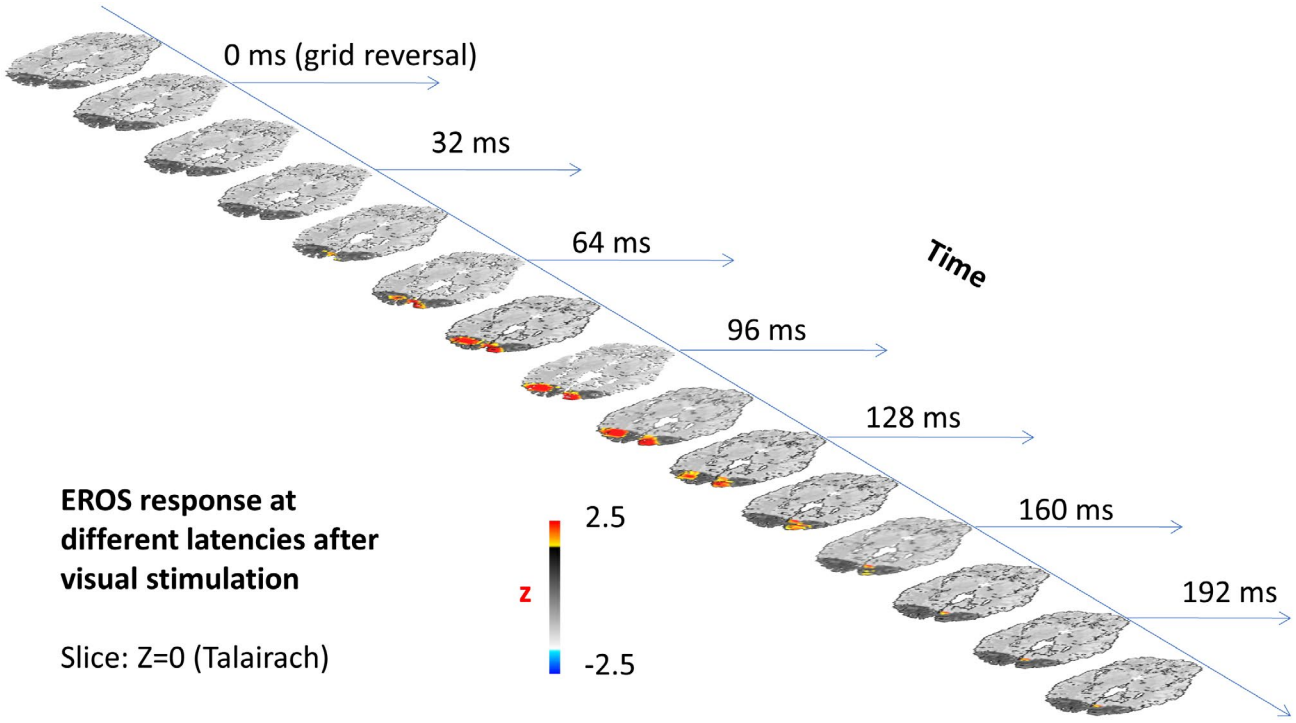

FIGURE 5 The event-related optical signal (EROS). The figure shows EROS data demonstrating how sensory information from the visual system spreads through the cortex: first medial and then lateral regions in occipital cortex are rapidly activated over 200 ms following visual stimulation

Following high school, Monica and Gabriele both attended the University of Rome, her for Psychology and him for Medicine. For Gabriele, the decision to pursue a medical degree was considered a radical departure from "the family business." Nearly all of Gabriele's 10 siblings became physicists of one sort or another. His identical twin brother, Raffaele Gratton, followed in their father's footsteps and is an astrophysicist at the renowned Astronomical Observatory of Padova, in Italy. When Gabriele decided to study medicine, his family thought he had gone soft—compared to physics, medicine was considered far too "messy" from a scientific perspective. Monica and Gabriele completed their degrees

in 1980. They married that same year in a small church in Frascati. According to Monica, they were never formally engaged—Gabriele's sister simply introduced her as his fiancé at a family gathering, and that sealed the deal. Accordingly, Monica never wore an engagement ring … until Christmas of 2008, when Gabriele finally presented her with one (she said yes).

In the fall of 1980, Monica and Gabriele moved to the United States. Monica had been accepted into the PhD program in Biological Psychology at the University of Illinois at Urbana-Champaign, where she joined the Cognitive Psychophysiology Lab (CPL) directed by Manny Donchin (and co-directed by Mike Coles). Gabriele was a so-called "trailing spouse," following Monica to Illinois. This was highly unconventional at the time, and was nothing short of scandalous to Gabriele's family. Once again, they feared he had gone soft—first medical school, and then traipsing across the globe to pursue his wife's ambition. In fact, his family's concerns were not totally unfounded, as Gabriele did not have a position of any kind when he and Monica arrived in Illinois. Moreover, neither Monica nor Gabriele were fluent in English at the time. As they explained it to me, they could speak only a little and could understand even less. Gabriele knew, however, that he wanted to study the neural basis of cognition, and that Illinois, and the CPL, eventually would provide that opportunity.

Indeed, within a month of Monica starting graduate school in January of 1981, Gabriele began volunteering in the CPL, working mainly on computer programing. It bears mentioning that 1981 was the year the "personal computer"—the IBM 5150—was first introduced on a large scale. Most people had never even seen a computer, let alone knew how to program one. Within a couple of months, Gabriele had a finished a version of what would become the EMCP algorithm (Gratton et al., 1983). This work, among other things, impressed Donchin and Coles enough that they eventually persuaded Gabriele to join Monica in the graduate program in Biological Psychology at Illinois. As their eldest daughter put it when describing to me her father's training trajectory, Gabriele effectively completed a postdoc before starting work on his PhD, having already earned his MD from the University of Rome.

Monica earned her PhD from Illinois in 1990, and Gabriele followed with his PhD one year later. After spending a year in Research Scientist positions back in Italy, at Fidia Research Labs in Padova, Monica and Gabriele moved back to the U.S. in 1992, when Gabriele began a position as Assistant Professor of Psychology at Columbia University in New York and Monica began a position as a Research Scientist at the New York State Psychiatric Institute. In 1996, Monica and Gabriele both accepted tenure-track faculty positions in the Department of Psychological Sciences at the University of Missouri. They remained at Mizzou until 2001, when they were recruited to return to Illinois. They have been there ever since, where they are both currently Professors of Psychology and members of the Beckman Institute and Neuroscience Program.

2 | A LEGACY BEYOND SCIENCE

In addition to their distinguished scientific contributions, Monica and Gabriele also have left a legacy through their mentorship of junior scientists. Between the two of them, Monica and Gabriele have advised or co-advised nearly 40 PhD students and more than a dozen postdoctoral researchers, many of whom have gone on to productive scientific careers of their own. The fact that Monica and Gabriele are a team means that each of their trainees benefits from their joint knowledge and perspectives—they are, essentially, a two-for-one special in mentoring.

Importantly, their mentorship extends well beyond their lab and professional development activities. Monica and Gabriele are very generous with their personal time, routinely inviting students and postdocs to lunch or dinner. They also provide outstanding examples of achieving a work-life balance in academia and succeeding brilliantly at both. As a postdoc in their lab, I quickly learned that meetings with them had to be scheduled during typical workday hours, as they were not in the lab in the evening or on weekends. At home, their time with their daughters, Caterina and Cristina Gratton, was precious. I witnessed on numerous occasions the family gathering in their living room in the evening to simply sit and talk, often while the girls worked on their homework. Television and other screens were not part of their family time. Monica and Gabriele also were active with Caterina and Cristina's school and extracurricular activities, including Gabriele coaching his daughters' soccer teams (and playing in an adult league himself). Unsurprisingly, their children have grown up to be successful and happy adults. Their eldest daughter, Caterina, followed in their footsteps and earned a PhD in Neuroscience; currently, she is Assistant Professor of Psychology at Northwestern University. Cristina teaches high school science in St. Louis County, Missouri.

3 | CONCLUSION

Monica Fabiani and Gabriele Gratton, both as individuals and as a scientific team, have made and continue to make distinguished contributions to the science of psychophysiology and to the vibrancy of SPR. Their example of rigorous and prolific scientific pursuits and an academic life well lived is inspirational to their trainees and to the field more broadly. Their development of new research techniques and methods will continue to impact the field long after they stop making new contributions, which, I hope, is still many years from now.

ORCID

Bruce D. Bartholow https://orcid.org/0000-0002-9234-6417

REFERENCES

(Note: A full list of Fabiani's and Gratton's publications can be found in the Supporting Information.)

Akçay, Ç., & Hazeltine, E. (2008). Conflict adaptation depends on task structure. *Journal of Experimental Psychology: Human Perception and Performance*, *34*(4), 958–973. https://doi.org/10.1037/0096-1523.34.4.958

Blais, C., Stefanidi, K., & Brewer, G. A. (2014). The Gratton effect remains after controlling for contingencies and stimulus repetitions. *Frontiers in Psychology*, *5*(1207), 1–11. https://doi.org/10.3389/fpsyg.2014.01207

Botvinick, M. M., Carter, C. S., Braver, T. S., Barch, D. M., & Cohen, J. D. (2001). Conflict monitoring and cognitive control. *Psychological Review*, *108*, 624–652. https://doi.org/10.1037/0033-295X.108.3.624

Botvinick, M. M., Nystrom, L. E., Fissell, K., Carter, C. S., & Cohen, J. D. (1999). Conflict monitoring versus selection for-action in anterior cingulate cortex. *Nature*, *402*, 179–181. https://doi.org/10.1038/46035

Carter, C. S., Braver, T. S., Barch, D. M., Botvinick, M. M., Noll, D., & Cohen, J. D. (1998). Anterior cingulate cortex, error detection, and the online monitoring of performance. *Science*, *280*, 747–749. https://doi.org/10.1126/science.280.5364.747

Clayson, P. E., & Larson, M. J. (2011). Conflict adaptation and sequential trial effects: Support for the conflict monitoring theory. *Neuropsychologia*, *49*(7), 1953–1961. https://doi.org/10.1016/j.neuropsychologia.2011.03.023

Donchin, E., & Coles, M. G. H. (1988). Is the P300 component a manifestation of context updating? *Behavioral and Brain Sciences*, *11*(3), 357–374. https://doi.org/10.1017/S0140525X00058027

Egner, T., & Hirsch, J. (2005). The neural correlates and functional integration of cognitive control in a Stroop task. *NeuroImage*, *24*(2), 539–547. https://doi.org/10.1016/j.neuroimage.2004.09.007

Eriksen, B. A., & Eriksen, C. W. (1974). Effects of noise letters upon the identification of a target letter in a nonsearch task. *Perception & Psychophysics*, *16*(1), 143–149. https://doi.org/10.3758/BF03203267

Fabiani, M., & Donchin, E. (1995). Encoding processes and memory organization: A model of the von Restorff effect. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *21*(1), 224–240. https://doi.org/10.1037/0278-7393.21.1.224

Fabiani, M., & Friedman, D. (1995). Changes in brain activity patterns in aging: The novelty oddball. *Psychophysiology*, *32*(6), 579–594. https://doi.org/10.1111/j.1469-8986.1995.tb01234.x

Fabiani, M., Gordon, B. A., Maclin, E. L., Pearson, M. A., Brumback-Peltz, C. R., Low, K. A., … Gratton, G. (2014). Neurovascular coupling in normal aging: A combined optical, ERP and fMRI study. *NeuroImage*, *85*, 592–607. https://doi.org/10.1016/j.neuroimage.2013.04.113

Fabiani, M., Gratton, G., Chiarenza, G. A., & Donchin, E. (1990). A psychophysiological investigation of the von Restorff paradigm in children. *Journal of Psychophysiology*, *4*(1), 15–24.

Fabiani, M., Karis, D., & Donchin, E. (1990). Effects of mnemonic strategy manipulation in a Von Restorff paradigm. *Electroencephalography and Clinical Neurophysiology*, *75*(1–2), 22–35. https://doi.org/10.1016/0013-4694(90)90149-E

Fabiani, M., Low, K. A., Tan, C.-H., Zimmerman, B., Fletcher, M. A., Schneider-Garces, N., … Gratton, G. (2014). Taking the pulse of aging: Mapping pulse pressure and elasticity in cerebral arteries with optical methods. *Psychophysiology*, *51*(11), 1072–1088. https://doi.org/10.1111/psyp.12288

Fletcher, M. A., Low, K. A., Boyd, R., Zimmerman, B., Gordon, B. A., Tan, C. H., … Fabiani, M. (2016). Comparing aging and fitness effects on brain anatomy. *Frontiers in Human Neuroscience*, *10*(286), 1–15. https://doi.org/10.3389/fnhum.2016.00286

Frame, M. E., Johnson, J. G., & Thomas, R. D. (2018). A neural indicator of response competition in preferential choice. *Decision*, *5*(4), 272–286. https://doi.org/10.1037/dec0000078

Gratton, G. (2018). Brain reflections: A circuit-based framework for understanding information processing and cognitive control. *Psychophysiology*, *55*(e13038), 1–26. https://doi.org/10.1111/psyp.13038

Gratton, G., Coles, M. G. H., & Donchin, E. (1983). A new method for off-line removal of ocular artifact. *Electroencephalography and Clinical Neurophysiology*, *55*(4), 468–484. https://doi.org/10.1016/0013-4694(83)90135-9

Gratton, G., Coles, M. G. H., & Donchin, E. (1992). Optimizing the use of information: Strategic control of activation of responses. *Journal of Experimental Psychology: General*, *121*, 480–506. https://doi.org/10.1037/0096-3445.121.4.480

Gratton, G., Coles, M. G. H., Sirevaag, E. J., Eriksen, C. W., & Donchin, E. (1988). Pre- and poststimulus activation of response channels: A psychophysiological analysis. *Journal of Experimental Psychology: Human Perception and Performance*, *14*(3), 331–344. https://doi.org/10.1037/0096-1523.14.3.331

Gratton, G., & Fabiani, M. (2001). Shedding light on brain function. *Trends in Cognitive Sciences*, *5*(8), 357–363.

Gratton, G., Fabiani, M., Low, K. A., & Maclin, E. L. (2015). *Non-invasive optical imaging for measuring pulse and arterial elasticity in the brain (U.S. Patent No. 9,167,970)*. Washington, DC: U.S. Patent and Trademark Office.

Gratton, G., Sarno, A., Maclin, E., Corballis, P. M., & Fabiani, M. (2000). Toward noninvasive 3-D imaging of the time course of cortical activity: Investigation of the depth of the event-related optical signal. *NeuroImage*, *11*, 491–504. https://doi.org/10.1006/nimg.2000.0565

Heitz, R. P., & Engle, R. W. (2007). Focusing the spotlight: Individual differences in visual attention control. *Journal of Experimental Psychology: General*, *136*(2), 217–240. https://doi.org/10.1037/0096-3445.136.2.217

Hill, D. K., & Keynes, R. D. (1949). Opacity changes in stimulated nerve. *The Journal of Physiology*, *108*, 278–281. https://doi.org/10.1113/jphysiol.1949.sp004331

Karis, D., Fabiani, M., & Donchin, E. (1984). "P300" and memory: Individual differences in the von Restorff effect. *Cognitive Psychology*, *16*(2), 177–216. https://doi.org/10.1016/0010-0285(84)90007-0

Kerns, J. G., Cohen, J. D., MacDonald, A. W., Cho, R. Y., Stenger, V. A., & Carter, C. S. (2004). Anterior cingulate conflict monitoring and adjustments in control. *Science*, *303*, 1023–1026. https://doi.org/10.1126/science.1089910

Mayr, U., Awh, E., & Laurey, P. (2003). Conflict adaptation effects in the absence of executive control. *Nature Neuroscience*, *6*, 450–452. https://doi.org/10.1038/nn1051

Morand-Beaulieu, S., O'Connor, K. P., Sauvé, G., Blanchet, P. J., & Lavoie, M. E. (2015). Cognitive-behavioral therapy induces sensorimotor and specific electrocortical changes in chronic tic and Tourette's disorder. *Neuropsychologia*, *79*, 310–321. https://doi.org/10.1016/j.neuropsychologia.2015.05.024

Nosek, B. A., Graham, J., Lindner, N. M., Kesebir, S., Hawkins, C. B., Hahn, C., … Tenney, E. R. (2010). Cumulative and career-stage citation impact of social-personality psychology programs and their members. *Personality and Social Psychology Bulletin*, *26*, 1283–1300. https://doi.org/10.1177/0146167210378111

Rector, D., Yao, X., George, J., & Harper, R. (2009). In vivo observations of rapid scattered light changes associated with neurophysiological activity. In R. D. Frostig (Ed.), *In vivo optical imaging of brain function* (2nd ed., pp. 143–170). Boca Raton, FL: Taylor & Francis. https://doi.org/10.1201/9781420076851.ch5

Schmidt, J. R. (2013). Questioning conflict adaptation: Proportion congruent and Gratton effects reconsidered. *Psychonomic Bulletin and Review*, *20*(4), 615–630. https://doi.org/10.3758/s13423-012-0373-0

Schmidt, J. R., & De Houwer, J. (2011). Now you see it, now you don't: Controlling for contingencies and stimulus repetitions eliminates the Gratton effect. *Acta Psychologica*, *138*, 176–186. https://doi.org/10.1016/j.actpsy.2011.06.002

Shitova, N., Roelofs, A., Schriefers, H., Bastiaansen, M., & Schoffelen, J. M. (2017). Control adjustments in speaking: Electrophysiology of the Gratton effect in picture naming. *Cortex*, *92*, 289–303. https://doi.org/10.1016/j.cortex.2017.04.017

Tan, C. H., Low, K. A., Chiarelli, A. M., Fletcher, M. A., Navarra, R., Burzynska, A. Z., … Gratton, G. (2019). Optical measures of cerebral arterial stiffness are associated with white matter signal abnormalities and cognitive performance in normal aging. *Neurobiology of Aging*, *84*, 200–207.

Ullsperger, M., Bylsma, L. M., & Botvinick, M. M. (2005). The conflict adaptation effect: It's not just priming. *Cognitive, Affective and Behavioral Neuroscience*, *5*, 467–472. https://doi.org/10.3758/CABN.5.4.467

Vallesi, A., Mapelli, D., Schiff, S., Amodio, P., & Umiltà, C. (2005). Horizontal and vertical Simon effect: Different underlying mechanisms? *Cognition*, *96*(1), 33–43. https://doi.org/10.1016/j.cognition.2004.11.009

Van Maanen, L., & Van Rijn, H. (2010). The locus of the Gratton effect in picture-word interference. *Topics in Cognitive Science*, *2*(1), 168–180. https://doi.org/10.1111/j.1756-8765.2009.01069.x

Von Gunten, C. D., Volpert-Esmond, H. I., & Bartholow, B. D. (2018). Temporal dynamics of reactive cognitive control as revealed by event-related brain potentials. *Psychophysiology*, *55*(3), https://doi.org/10.1111/psyp.13007

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

How to cite this article: Bartholow BD. For distinguished contributions to psychophysiology: Monica Fabiani and Gabriele Gratton. *Psychophysiology*. 2020;00:e13536. https://doi.org/10.1111/psyp.13536