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Editorial

Dear Readers,

This new edition of the LIFE newsletter presents work by two alumnae.

Former UM fellow Kate Kuhlman is now assistant professor at University of California at Irvine. Here she reports on the ways in which the immune system influences behavior, specifically during aging. Kate was recently named an APS Rising Star, as was UM alumnus Steve Roberts (now assistant professor at Stanford University). Congratulations to them both!

Former UZH fellow Damaris Aschwanden is now a postdoc at Florida State University. She presents work done with colleagues on the way personality plays out in the COVID-19 pandemic. Their findings suggest that public health advice could be more effective if it is individualized according to the recipients' personality traits.

We ask UZH faculty Martin Meyer our 10 questions (including a new one on corona) before introducing two new fellows at the two European LIFE sites. Welcome to Christine Dworschak in Zurich and Sina Schwarze in Berlin!

The publication list is longer than usual because we have heard about many new publications by alumni in the course of updating their profiles on the LIFE website over the past months. Once again you will see what a wide range of topics is being worked on within the LIFE community.

As Easter is coming up in non-orthodox Christian cultures, I've selected some typical images to illustrate this newsletter issue. Clearly, these symbols of new life stem from pre-Christian times, celebrating the beginning of spring in the northern hemisphere.

Wishing you a happy and healthy seasonal transition wherever you may be!

Julia Delius

Source: Andy Rouse / Nature Picture Library / Universal Images Group (UIG)

European brown hare (*Lepus europaeus)* in grass, UK

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Reminder

Fellows, alumni, and faculty, please keep us informed about your LIFE-relevant news (e.g., awards, career moves)! Fellows and alumni, please check that your web profiles are up-to-date—they are often the first thing that pops up when your name is googled! Send your updates to delius@mpib-berlin.mpg.de

LIFE Website: www.imprs-life.mpg.de

Immune Influences on Behavior: The Role of the Aging Brain

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Doctoral training took me deep into human psychophysiology where I learned about the hormones produced during stressful experiences and about how these evolutionarily-conserved neurobiological systems are shaped by development and may contribute to health and behavior over time. Training in the LIFE program during this time helped to both deepen my appreciation for these pathways within a developmental framework and broaden my understanding of their social and economic implications. As a result of the former, I pursued postdoctoral training in psychoneuroimmunology at UCLA which began in 2014.

The immune system is truly astonishing in its simultaneous simplicity and complexity. It is comprised of cells (leukocytes or white blood cells) that circulate throughout the body primarily in blood and organs (such as the thymus where immune cells congregate while waiting for a threat). The immune system's entire job is to patrol the body for potential threat by sorting everything it comes across as either "me" or "not me." If an immune cell finds a potential threat, it sends out soluble protein signals that alert other immune cells of an intruder, the nature of the threat, and to request more immune cells wherever the threat was encountered. These soluble proteins—and particularly their sustained accumulation—are commonly referred to in both scholarly and popular mediums as inflammation.

The role of inflammation in physical disease has been well-documented nearly everywhere except the brain. To be clear, we knew that immune activation could influence the central nervous system and behavior—as evidenced by phenomena like fever, changes in sleep architecture, and psychomotor slowing as measured in both behavioral tasks and activity in the substantia nigra—just not how. This is largely because the consensus within biological sciences had been that the brain is "immune-privileged," such that immune cells are incapable of entering the central nervous system. All of this changed in 2015 when Jonathan Kipnis, Washington University in St. Louis, published the first evidence of a lymphatic system in the brain that clearly documented immune cells entering and exiting brain tissue with a great deal of ease (Louveau et al., 2015). In parallel, the field of neuroscience was also learning that the resident immune cells of the brain, microglia, have critical periods in early development that dramatically change brain development through synaptogenesis and pruning (Paolicelli et al., 2011). As a result of these and subsequent discoveries, research at the intersection of neuroscience, immunology, and behavior is exploding. We now understand much more about how immune activation can alter behavioral functioning, such as through altered neurotransmission, as well as which neural circuits and behavioral correlates are most reliably affected.

Indeed, one of the projects that has come to define my postdoctoral training was a systematic review of the literature on how different forms of immune activation lead to symptoms we see in patients with Major Depressive Disorder (Dooley et al., 2018). There are many ways to activate the immune system experimentally; you can use something mild like a vaccine, something robust like endotoxin, or something in the middle that can be pharmacologically sustained over time. Somatic symptoms of depression (e.g., sleep, psychomotor slowing, and fatigue) are altered at almost any dose of immune activation, while other symptom domains only appear to be affected by robust or prolonged immune activation (Dooley et al., 2018; see Figure 1).

Yet, my training in the LIFE program kept me questioning the stability of these phenomena across the lifespan. Whether the role of the immune system in psychological processes varies across the lifespan has, in my humble opinion, been neglected. What we know, largely as a result of research by many of the esteemed scientists and faculty in the LIFE program, is that the

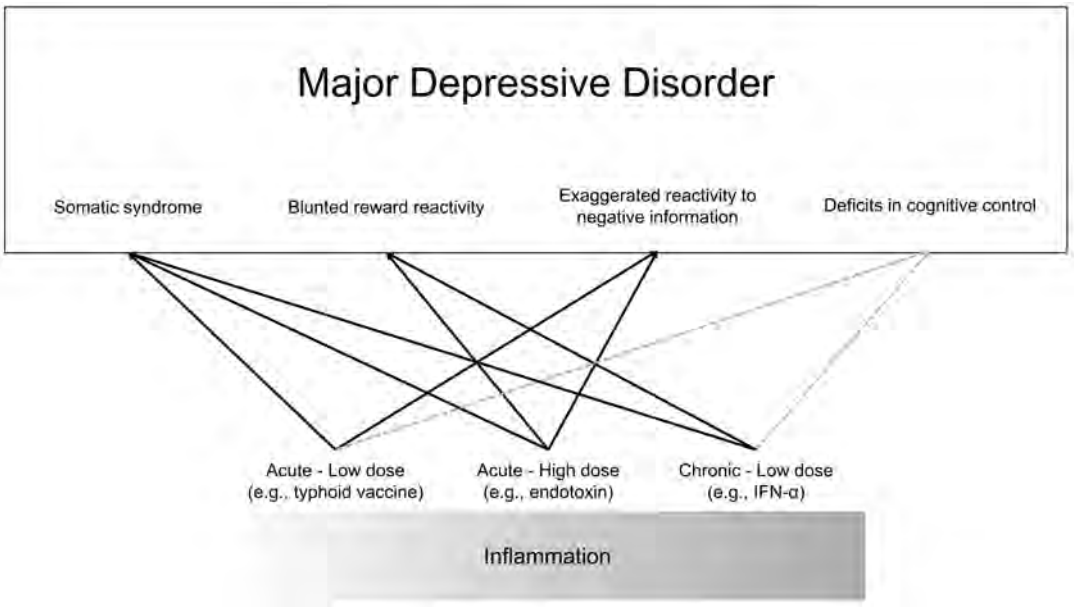

Figure 1. The role of exogenous immune activation in endophenotypes observed in depression. First published in Dooley et al. (2018).

brain changes throughout the entire human lifespan. Some of these changes can be explained by loss of neural tissue. Thus, it follows that the effect of immune signaling on psychological processes would also change across the lifespan. For example, it is plausible that global loss of neural tissue in the aging brain may render the entire central nervous system less sensitive to signaling from the immune system. However, microglia also change across the lifespan, becoming more reactive to potential threats with increasing age (Norden & Godbout, 2013). Thus, it is also plausible that uneven loss of neural tissue across the brain may make neural circuits with the most integrity greater targets for immune signaling and therefore more sensitive. The potential clinical implications of knowing the answers to these questions could be extensive for early detection of neuropathology as well as utility of pharmacological interventions in older adults suffering from depression and anxiety.

With the hypothesis that the association between inflammation and psychological sequelae may change across the lifespan in mind, my team looked to the MIDUS2 Biomarker dataset where we found some modest, cross-sectional evidence of differential associations between inflammatory markers and some behavioral domains as a function of age (Straka et al., 2021). In particular, the association between inflammation and somatic complaints was more apparent in the participants older than 65 years relative to the participants younger than 40 (see Figure 2).

More recently, I have been looking at these associations in a prospective, longitudinal sample of women who were followed throughout their treatment and recovery from breast cancer (Bower et al., 2018). These women provided blood samples and reported their depressive symptoms just after their surgeries, at the end of treatment, and then 6, 12, and 18 months later. With these data, we looked at the associations between inflammation and different behavioral domains at both the between- and within-subjects level, thus beginning to separate out the role of sustained elevations in inflammatory signaling from within-person fluctuations in inflammation that occur over time. The results of this investigation are preliminary, but a nuanced story emerges. Most notably, sensitivity to inflammation was lower in older relative to younger women in the sample for most symptom domains, and somatic symptoms appear to be correlated more with sustained elevations in inflammatory markers (between-subjects effect) not necessarily fluctuations in inflammation over time (within-subject effects) (Kuhlman and colleagues, in preparation). Of course, the limitation of both of these investigations so far has been the constrained ages of the samples. Both MIDUS2 and the breast cancer survivor samples had a wide range of ages represented (ages 28 to 84 years), but the MIDUS sample was cross-sectional and the breast cancer sample was only followed for a few years. The true test of these associations in a human population would require large samples of aging adults, followed somewhat intensively over decades

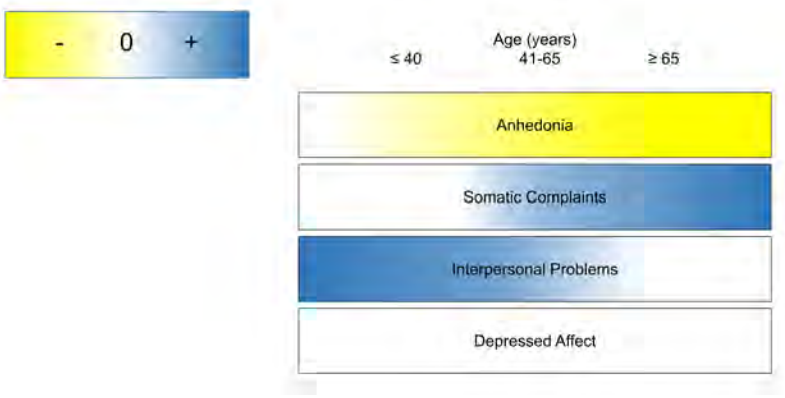

Figure 2. Associations between common inflammatory markers and psychological domains as a function of age in the MIDUS 2 Biomarker sample. First published in Straka et al. (2018).

of middle- and late adulthood. Luckily, I have a very capable and motivated student interested in delving into the Health and Retirement Study with this question.

As always, more questions remain, many of which cannot be thoroughly answered with human subjects. For example, could it be the case that neural sensitivity to immune activation declines in neural circuits that lose integrity with age, or that affinity of immune proteins to specific neural circuits contribute to their degradation? Questions of this nature are typically settled in animal models in psychoneuroimmunology, although in this case the solution may not be that straightforward. As it turns out, endotoxin (one of the most common methods of immune activation in rodent models) kills two thirds of the aging subjects (Saito et al., 2003), perhaps explaining part of the gap in the literature so far.

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How Does Personality Play out in the COVID-19 Pandemic?

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We have been living with the novel coronavirus SARS-CoV-2 for more than a year now, and the spread of coronavirus disease 2019 (COVID-19) is still going strong in many areas around the world. The new COVID-19 vaccine brings hope, but we are still at the beginning of a long journey. As the pandemic wears on, the only means to prevent the disease is to avoid being exposed to the virus and to keep engaging in precautions. Individual differences in personality are likely to contribute to how people engage in such precautions. A year ago, our lab conducted a study to investigate whether personality (assessed before the COVID-19 pandemic) was associated with precautions and three other psychological and behavioral responses during the early days of the COVID-19 outbreak in the United States. More specifically, we investigated whether the Five-Factor Model (FFM) personality traits and their facets were associated with (1) concerns (e.g., whether respondents were concerned about contracting the coronavirus), (2) precautions taken to avoid catching the coronavirus (e.g., whether participants washed their hands), (3) preparatory behaviors (e.g., whether participants stocked up on toilet paper—we were all wondering who was behind the coronavirus toilet paper shortage, right?!), and (4) duration estimates of the consequences of the pandemic (e.g., how long participants thought it would last until society gets back to normal).

The FFM personality traits and their facets may shape such responses through beliefs and attitudes associated with them (McCrae & Costa, 2006). The five traits are known as neuroticism, extraversion, openness to experience (hereafter; openness), agreeableness, and conscientiousness. Briefly, neuroticism contrasts even-temperedness with the tendency to feel worry, anxiety, depression, and anger. Extraversion refers to the propensity to be sociable, active, assertive, and to experience positive affect. Openness reflects the tendency to be open to new ideas, creative, original, and complex. Agreeableness refers to the propensity to be trusting, warm, modest, and altruistic. Conscientiousness reflects the tendency to be disciplined, organized, planful, task- and goal-directed, and rule-following. Facets are specific and unique aspects of the broader trait. For example, anxiety, depression, and emotional volatility are facets of neuroticism. Sociability, assertiveness, and energy level are facets of extraversion. Intellectual curiosity, aesthetic sensitivity, and creative imagination are facets of openness. Compassion, respectfulness, and trust are facets of agreeableness. Organization, productiveness, and responsibility are facets of conscientiousness. It is interesting and important to consider facets (and not only traits) because they can have more predictive power than the overarching trait (Paunonen et al., 2003) or facets from the same trait can have associations that go in opposite directions (Sutin et al., 2011). As such, facet-level analyses offer a deeper understanding of which component of the broad trait is most relevant for specific outcomes.

What did we expect?

From the literature on health behaviors, we know that conscientiousness and neuroticism emerge as the most relevant predictors (Hampson & Friedman, 2008; Turiano et al., 2018). Conscientious individuals, for example, tend to exercise more (Sutin et al., 2016) and to smoke less (Hakulinen et al., 2015). Neuroticism, in contrast, has been associated with both health-risk and health-promoting behaviors. On the one hand, neurotic people tend to be physically inactive (Sutin et al., 2016), drink more alcohol (Malouff et al., 2007), and eat less fruit and vegetables (Gale et al., 2017). On the other hand, neurotic individuals are more likely to use healthcare services (Cuijpers et al., 2010) and to engage in preventive cancer screenings (Aschwanden et al., 2019). This inconsistency may be explained by mediators and/or moderators, such that neurotic people may engage in certain health-risk behaviors (e.g., drinking alcohol) to seek emotional relief (Mõttus et al., 2012), but they may also adopt health-promoting behaviors (e.g., using healthcare services) because of an anxiety-provoked vigilance (Friedman, 2000; Weiss & Deary, 2019). In the context of a pandemic that induces fear, we ex-

pected the latter to be of relevance. We further expected that (1) higher neuroticism would be associated with more concerns, (2) higher neuroticism and (3) higher conscientiousness would be associated with more precautions to avoid catching the coronavirus, (4) higher neuroticism and (5) higher conscientiousness would be associated with more pandemic-related preparatory behaviors, and that (6) higher neuroticism would predict more pessimistic duration estimates of pandemic-related issues, whereas (7) higher extraversion would predict more optimistic duration estimates. We did not make directional hypotheses for the remaining traits or facets.

What did we do?

We sampled 2,066 Americans (mean age = 51.42 years; age range = 18–98; 48.5% female; 68.0% White; 11.1% Hispanic) through an online survey. Personality was assessed between January 31 and February 10, 2020, when the public was not aware of the spread of coronavirus in the United States, using the Big Five Inventory-2 (Soto & John, 2017). Psychological and behavioral responses were assessed between March 18 and 29, 2020, when Americans were asked by the White House to follow the "15 days to slow the spread" coronavirus guidelines (The White House, 2020). To assess concerns, we asked participants how concerned they were about: contracting the coronavirus; becoming severely ill or dying from COVID-19; someone in their family becoming severely ill or dying from COVID-19; losing their job or changes in their employment because of the spread of the coronavirus; losses in their assets/business or retirement investment plans because of the spread of the coronavirus; the coronavirus affecting their relationships with their partner, friends, or family members; change of plans for travel, vacations, or attendance at large events due to the coronavirus; the coronavirus affecting their own education or that of someone close; the disruption in daily activities caused by the coronavirus making them lonely, people in their community losing their jobs/not having money for food because of the coronavirus; and the coronavirus affecting the US economy. To measure precautions, we asked participants whether they washed their hands often, used hand sanitizer, avoided touching their eyes/nose/mouth, put distance between themselves and other people (social distancing), wore a face mask, and cleaned and disinfected surfaces. To assess preparatory behaviors, we asked participants whether they bought face masks, stocked up on hand sanitizer, toilet paper, food, and/or drinks, and whether they changed any travel plans because of the coronavirus. To measure duration estimates, we asked participants how long they thought it would last until the outbreak is controlled, the lockdown ends, society gets back to normal, they recover from financial losses, and the US recovers from financial losses. We analyzed all outcomes at both the aggregated and item level to gain a more fine-grained picture of these responses. We conducted regression models controlling for age, gender, education, race, ethnicity, and income.

More information about the measures and analyses can be found in our publication (Aschwanden et al., 2021) or via the Open Science Framework, where we preregistered our hypotheses and statistical analyses (https://osf.io/kbej9), and made data and the R script publicly available (https://osf.io/tkbf5).

What did we find?

Figure 1 shows the associations of personality traits and facets with the four aggregated outcomes. Four of our seven hypotheses were supported: Higher neuroticism was associated with more concerns, higher conscientiousness was associated with more preparatory behaviors, and higher neuroticism and extraversion were related to more pessimistic and optimistic duration estimates, respectively. In contrast to expectations, higher neuroticism was associated with fewer precautions and was unrelated to preparatory behaviors. We further found evidence that the associations between the traits and some of the responses were stronger for older adults, a group at higher risk for complications of COVID-19.

Why may personality shape some of the responses (and some not)?

Neuroticism reflects the tendency to experience irritability, anger, sadness, anxiety, worry, and hostility (Costa & McCrae, 1992). It is thus unsurprising that individuals high in this trait reported more concerns and were pessimistic in their duration estimates related to the COVID-19 pandemic. Previous research showed that neurotic people experience more chronic negative affect, have especially intense reactions to negative events, and rely more on emotion-focused than problem-

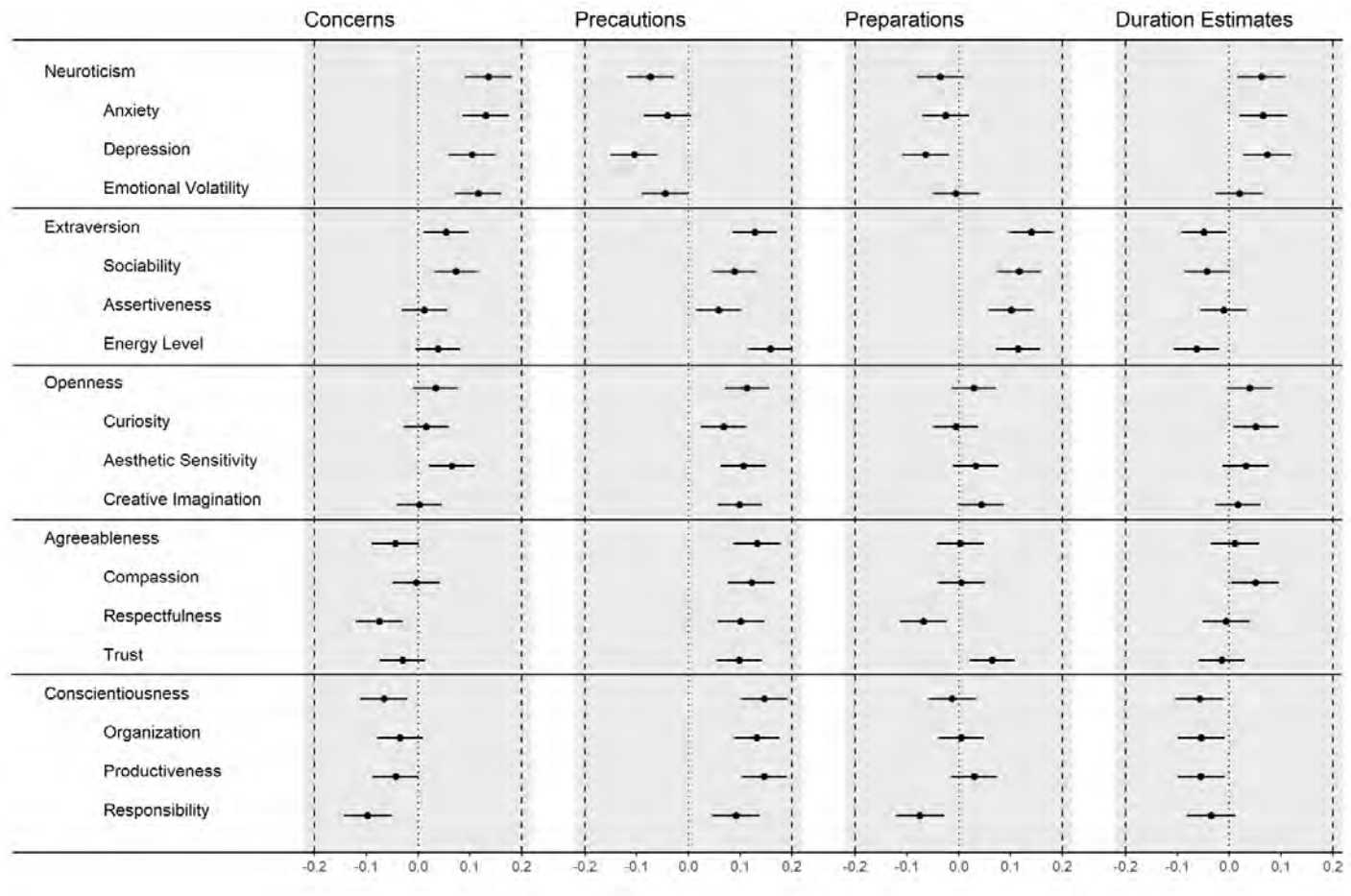

Figure 1. Associations of personality traits and facets with the four outcomes. Standardized regression coefficients (controlled for demographic covariates) are shown.

focused coping strategies (Carver & Connor-Smith, 2010). In the context of COVID-19, it also has been shown that neurotic people experience more negative affect in their daily lives during the pandemic (Kroencke et al., 2021). Furthermore, we found that neurotic individuals engaged in fewer precautions, and that this effect was mainly driven by the facet of depression (Figure 1). This finding was in contrast to our expectation; we hypothesized that the pandemic would induce fear and lead to an anxiety-provoked vigilance (Friedman, 2000; Weiss & Deary, 2019) in neurotic individuals. It looks, however, rather like neurotic individuals (especially those who score high on the depression-facet) engaged in risky behaviors (by not engaging in precautions) as a way to cope with aversive mood states (Cooper et al., 2000).

As expected, conscientious people engaged in more precautions. As being organized, dutiful, and responsible are key attributes of conscientiousness, individuals with high scores on this trait may be more likely to follow recommendations on precautions. The one exception among precautions was wearing a face mask, which was not associated with conscientiousness (Figure 2). It should be noted that at the time of our survey, wearing a face mask in public settings was not recommended by the Centers for Disease Control and Prevention, which can be interpreted such that conscientious individuals adhered to rules by not endorsing this precaution. At the trait level, conscientiousness was not associated significantly with preparatory behaviors. At the facet level, however, higher responsibility was related to fewer preparations (Figure 1). People who score high on responsibility may stockpile less because they feel interpersonally responsible and care about their community (i.e., they do not want to take resources from others). This association was consistent with our finding that conscientious individuals reported more concerns about their community.

In line with our expectation, extraverted people reported more optimistic (i.e., shorter) pandemic-related duration estimates and this effect was mainly driven by the facet of energy level (Figure 1). Extraverts tend to experience positive affect, have greater global self-efficacy and make more positive evaluations of their lives (Soto, 2015) and health (Sutin & Terracciano, 2016). This positive

Precautions	Neuroticism	Conscientiousness
Wash hands 	-	+++
Hand sanitizer 	-	+
Avoid touching 	-	++
Physical distance 	-	++
Face mask 	0	-
Clean 	-	++

Figure 2. This figure illustrates the direction and strength of association of the two hypothesized traits (i.e., neuroticism and conscientiousness) with each precaution. A zero (0) refers to a standardized regression coefficient (β) around zero. The minus (-) refers to a small negative effect (β < -.10). The plus (+) refers to a positive association, whereas the strength of association is illustrated as + = small (β < .10); ++ = moderate (β < .30); +++ = large (β > .50). Images were retrieved from online resources (Atlanta ISD, 2020; Centers for Disease Control and Prevention, 2020; Shenandoah University, 2020).

view may be mirrored in duration estimates, such that these individuals are more hopeful and optimistic that the pandemic and the recovery from its consequences will be sooner rather than later. It should be noted that higher extraversion was linked to greater concerns too, which contradicts the aforementioned line of argumentation. However, concerns about the pandemic should not be equated to pessimism; to some extent, they might be a rational response.

Extraverted people also undertook more preparations, that is, they stockpiled face masks, hand sanitizer, food, and—toilet paper (here we go, now we know who bought the most rolls 😉). Stockpiling may be a strategy of emotion regulation to make oneself feel "safe and prepared" in times of a new and dangerous threat. Previous work found a positive association between extraversion and emotion regulation consumption, such that extraverts purchased a product for the purposes of pleasure or of alleviating, repairing, and managing an emotion (Matzler et al., 2006). In our study, extraverts further reported more precautions, with the interesting exception of social distancing. As sociable and active individuals, they might particularly struggle to follow the recommendations on social distancing (Carvalho et al., 2020).

Is personality more predictive of COVID-19 responses in older adults?

About 25.9% of our sample was aged 65 years or older and potentially at higher risk for complications of COVID-19. We thus investigated whether age moderated the trait-response associations. Among the 65- to 96-year-olds, higher conscientiousness was associated with more preparations, higher openness was associated with greater concerns, and both higher openness and agreeableness were related to more preparations and longer duration estimates. Older adults high in conscientiousness may have stockpiled because they felt more threatened by COVID-19 since they are a high-risk group and thus may have tried to reduce their store visits. On the other hand, younger adults high in conscientiousness may not have stockpiled because they felt less threatened or for rational reasons, such as inconsistencies in official guidelines and expert opinion on face masks at the time of data collection. This pattern has implications: If all older adults took COVID-19 seriously, individual differences in personality should not matter; however, our findings indicate that they do matter and could be considered in the development of personality-tailored communication to older adults.

So what?

Our findings suggest that identifying individuals based on their personality and subsequently delivering personality-tailored messages may be useful during a pandemic. For example, we found different associations with specific precautions within traits (Figure 2). This might be useful information for public health messaging for better adherence

to specific precautions. Recommendations for precautions might need to be modified to be effective for those high in neuroticism and low in conscientiousness. For instance, people high in neuroticism may try to disassociate from threatening information to minimize the connection between their behavior and the health outcome (Gunthert et al., 1999; Rothman et al., 2001). It may be helpful to develop public health messaging that reduces such threat-to-health information.

Moreover, by considering facets of personality, we were able to obtain a deeper understanding of personality in the context of COVID-19 responses. In the case for preparatory behaviors, specific facets of neuroticism (depression) and conscientiousness (responsibility) had more predictive power than the trait. This pattern might be of interest for local authorities (Zytaruk, 2020) regarding future stop-stockpiling appeals; their public health messages could particularly focus on these facets.

Finally, the findings on concerns could have implications for health care professionals, particularly in terms of identifying individuals who might be at risk for experiencing loneliness. Loneliness has been a frequently discussed public health issue during the coronavirus crisis (American Psychological Association, 2020). We found that people high in neuroticism and extraversion reported greater concerns that the disruption in daily activities caused by the coronavirus will make them lonely. These individuals might benefit most from inclusion in early interventions to promote social connectedness.

So, how could we identify individuals based on their personality? It might be possible to inexpensively screen large numbers of individuals in the community for high neuroticism scores, for instance, via web-based questionnaires (Chapman et al., 2014; Lahey, 2009). These individuals could then subscribe for personalized health messaging and short messages would be sent to promote hand-washing, for example (Déglise et al., 2012; Ejemot-Nwadiaro et al., 2015). The personality-tailored modification of health messages seems a considerable challenge, but one that affords the potential for better adherence to precautions. Alternatively, intentional personality change interventions (Stieger et al., 2021) offer the possibility to increase conscientiousness for those who are motivated to become more conscientious.

It is obvious that we have a lot of more work ahead of us, not only in terms of fighting COVID-19, but also regarding the development of personality-tailored health messaging and more innovative approaches that address intentional personality change as well as the research-to-practice gap, so that suggested implications make their way into the public health sector.

Overall, our findings suggest that neuroticism, conscientiousness, and extraversion were linked to psychological and behavioral responses to the COVID-19 pandemic during the early days of the outbreak. Now, one year later, we would expect that these associations still hold based on both personality theory and the large literature on the health risks of neuroticism, the health benefits of conscientiousness, and the optimistic worldview of extraversion. We believe our study was able to show that the predictive power of personality in the health context also holds in a pandemic and we hope that our suggested implications inspire future work to develop personality-tailored health messaging.

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Black-bellied plover nest with four eggs on the tundra (*Pluvialis squatarola*), Alaska, USA

Source: Science Photo Library \ UIG

10 Questions

Martin Meyer, Titular Professor, Department of Psychology, University of Zurich

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How did you get involved in the study of auditory neurocognition?

My PhD project at the Max Planck Institute of Human Cognitive and Brain Sciences in Leipzig aimed at investigating the neural signature of spoken sentence comprehension. When I started to deal with the topic more intensively, I realized that auditory perception has to be better understand first. Hence, I started to wonder which roles speech melody and speech rhythm play for the processing of initial stages of spoken language comprehension.

Could you name books or articles that have profoundly influenced your own thinking about the neuroscience of understanding speech and language?

Actually, the work of David Poeppel and his "Asymmetric Sampling in Time Hypothesis" (e.g., Poeppel, 2003) was, and still is, the most inspiring approach that has been motivating my work over the last 20 years.

What do you consider the main current debates within the field?

First, the question when modern language emerged is still intensively debated. This question is not a trivial one as the evolutionary roots of our language can tell us a lot about its functional architecture.

Second, the question of how and not where in the human brain language is processed is also the subject of intensive debates. Is language organized as a large-scale network or more in a modular way?

Third, the question whether subjective tinnitus is always preceded or even caused by cochlear damage and resulting peripheral hearing loss is still debated. Personally, I believe that even subjective tinnitus is evoked by an objective event. But it has to be conceived that some individuals suffering from subjective tinnitus do not demonstrate symptoms of peripheral hearing loss.

What research topics have been neglected or have not received enough attention so far?

As far as my research field is concerned, the question which contribution the right hemisphere makes to speech and language is still underinvestigated. Furthermore, the phenomenon of age-related central hearing loss, that is, the influence of age-related brain atrophy on spoken language understanding, requires a stronger focus.

One of your research foci is on tinnitus and ways to treat it. Can you tell us more about this topic?

To date, no intervention is known that helps in all cases of subjective tinnitus to the same extent. Tinnitus is an extremely heterogenous disorder and cannot be extinguished. However, EEG-based neurofeedback has turned out to be a promising approach that helps patients to better deal with tinnitus distress (e.g., Güntensperger et al., 2020). The patients experience self-efficacy, which is extremely beneficial as they learn to take back control about their brain and their life.

How can your research be applied to everyday life?

We are working on a transfer from the lab to a portable setting so that tinnitus patients will be able to perform neurofeedback training at home or elsewhere outside our lab environment.

What are you currently working on?

To keep the lab running even under the circumstances of the pandemic. Due to COVID-19 our studies on older participants and patients had to come to a complete standstill, which means an unwanted and fatal break for master and doctoral students. Planned schedules have collapsed. Research grants are about to expire. It is a disastrous situation.

Has the Covid-19 pandemic brought new insights for your research?

Indirectly, yes. Because there are now more and more observations that COVID-19 can intensify an existing tinnitus or trigger an acute tinnitus. With regard to the first case, psychodynamic reasons (increase of anxiety etc.) can probably be held responsible. In the second case, it cannot be excluded that the virus directly damages the hearing and hence evokes symptoms of tinnitus. This does not happen so rarely with viral infections, for example with herpes zoster oticus or measles. A first study investigating this connection was recently published (Almufarrij & Munro, 2021).

What do you get out of LIFE?

I am in permanent exchange with like-minded people from other disciplines. Hence I am always learning about new topics and approaches in the field of healthy aging.

What is the added value of LIFE's internationality?

For my doctoral students LIFE's internationality is an indisputable benefit. It allows them to build up an international network of peers and to collect international experience.

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Emu (*Dromaius novaehollandiae*) eggs in a nest. The chicks are incubated and raised by the male emu. Hattah-Kulkyne National Park, Victoria, Australia

Source: Bill Bachman

New LIFE Fellows in Berlin and Zurich

Christine Dworschak. During my studies in Clinical Psychology at Freie Universität Berlin, two research fields particularly piqued my curiosity: the investigation of risk factors for mental disorders on the one hand and the use of digital technologies in psychological interventions on the other. In order to gain more insights into these fields, I started working with several international research groups (e.g., Jutta Joormann's lab, Yale University). During this time, I realized that the combination of both of my research interests – namely using digital psychological interventions to tackle these risk factors – has an enormous potential to effectively prevent individuals from developing a mental disorder. However, I also noticed that while there is a lot of research on innovative online-based treatment approaches in younger adults, such research on older age groups is lacking. Since these new treatment approaches have been shown to be highly effective, I am convinced that it is important to make them available and suitable for all individuals across the lifespan. Therefore, in my PhD project, I am developing an online-based intervention for alleviating loneliness in the group of older adults, being one of the main risk factors for the development of depression (supervisors: Andreas Maercker, Eva Heim).

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Sina Schwarze. I am a predoctoral fellow at the Center for Lifespan Psychology at the MPI for Human Development in Berlin under the supervision of LIFE alumna Yana Fandakova and Ulman Lindenberger. My research focuses on mechanisms of behavioral and neural plasticity, especially concerning the development of cognitive control during childhood. More specifically, I am interested in how the networks underlying cognitive control differ in their functional and structural organization between children and adults, and how they are influenced by different training interventions.

For the thesis project of my Bachelor's degree in Psychology at the University of Mannheim (2018), I examined behavioral inhibition and how this cognitive control mechanism is influenced by the kind of stimuli used. In December 2020, I completed my Master's degree in Social, Cognitive and Affective Neuroscience at the Freie Universität Berlin. For my master's project, I investigated the differences in directed connectivity in the cognitive control network during task switching between children and adults at the Center for Lifespan Psychology at the MPI for Human Development under the supervision of Yana Fandakova.

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American robin's (*Turdus migratorius*) nest with eggs

Source: David R. Frazier / Photo Researchers / UIG

LIFE-Related Publications

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Decorated Easter eggs in traditional Sorbian motives at the annual Easter egg market in Schleife, near Hoyerswerda, Germany (about 160 km southeast of Berlin). This is a strong part of Sorbian tradition. The visual elements are meant to ward off evil. Sorbians are a Slavic minority in eastern Germany and many still speak Sorbian, a language closely related to Polish and Czech.

Source: Carsten Koall / Getty Images News / Getty Images / UIG

LIFE News

- The virtual *Spring Academy 2021* is in planning in Ann Arbor and will take place May 25–27.
- Perhaps it will be possible to meet again in person at the following *Fall Academy 2021* in Zurich on October 9–13?

Exchanges

- UM fellow *Colleen Frank* is hoping to come to Berlin to work with alumnus and faculty *Thorsten Pachur* from May to July if pandemic conditions allow.

LIFE Berlin

- *Sina Schwarze* has joined LIFE Berlin as an external fellow. She is working with alumna Yana Fadakova at the Center for Lifespan Psychology, MPIB (see p. 15 for more info).
- Alumnus *Charles Driver* has left the MPIB and taken up a new position as a research scientist at the Institute for Educational Evaluation in Zurich, which is associated with UZH. He will be working on large-scale educational data and continuing to improve longitudinal data analysis methods.
- HU alumna *Camilla Rjosk* has received a grant of over 1.5 million EUR from the German Federal Ministry of Education and Research (BMBF) to set up her own five-year interdisciplinary Junior Research Group "Multidimensional Heterogeneity in the Classroom: Measurement, Effects, Mechanisms" at the Institute for Educational Quality Improvement (IQB) in Berlin. The project aims to advance methods to measure student heterogeneity as a multidimensional construct at the classroom level. Based on secondary analyses of large-scale assessment data, the group will further investigate how multidimensional heterogeneity contributes to predicting student achievement and psychosocial outcomes and how it relates to potentially mediating process characteristics at different levels.
- MPIB fellow *Karola Schlegelmilch* has submitted her dissertation entitled "Grass or Gravel? Influences on the Visual Categorization of Naturalistic Structures in Infancy and Early Childhood" to Universität Potsdam.
- FU fellow *Mareike Trauernicht* has submitted her dissertation entitled "Burnout Symptoms in Preschool Teachers and the Relation to Job Conditions and Quality of Care" in January and will defend it later this month.
- The LIFE summer seminar will begin in April. Each of the sessions will be devoted to one of the Berlin fellows' projects. The fellows had the opportunity to nominate LIFE alumni from all four LIFE sites to be co-chairs (a great advantage of online events!). An impressive number of alumni have agreed to take part.
- *Ulman Lindenberger* will hold an Academic Writing Workshop in June.
- Faculty *Timo von Oertzen* and his colleagues at Universität der Bundeswehr are offering various methodology courses to Berlin fellows.
- Faculty *Manuel Voelkle* offered a workshop entitled "From Data to Causes – Advancing Research and Education on the Missing Link of Causal Inference" in March.

LIFE Michigan

- Fellow *Lilian Cabrera-Haro* has successfully defended her dissertation entitled "Asymmetrical Learning of Win and Loss Associations: Individual Differences and Task Effects." She will join the California Department of Public Health as a Research Scientist.
- Fellow *Hyesue Jang* has received a Pillsbury Graduate Research Award.
- Faculty *Daniel Keating* has been named an Association for Psychological Science (APS) Fellow.
- Alumna *Kate Kuhlman*, now at the University of California, Irvine has been named an APS Rising Star (cf. pp. 3 ff.).
- Fellow *Pia Lalwani* has been awarded a Rackham Predoctoral Fellowship (Barbour Scholar).
- Alumnus *Steven Roberts* (now Stanford University) has received the 2021 APS Janet Taylor Spence Award for Transformative Early Career Contributions as well as being named a 2021 APS Rising Star.

- Faculty *Laura Zahodne* has won two more awards: the Society for Clinical Neuropsychology (SCN/APA Div. 40) Robert A. and Phyllis Levitt Early Career Award in Neuropsychology and the APA Distinguished Scientific Award for Early Career Contribution to Psychology (in the area of Individual Differences).

LIFE Virginia

- Fellow *Miranda Beltzer* will be completing her clinical internship at New York-Presbyterian Hospital/Weill Cornell Medical Center.
- Fellow *Katie Daniel* received the UVA's Rebecca Boone Memorial Award for Excellence in Teaching.
- Alumna *Vanessa LoBue*, now at Rutgers UNiversity, has been made an APS Fellow.
- Fellow *Shannon Savell* won the departmental Graduate Teaching Award.
- Alumnus *Robert Moulder* was a major contributor to the World Health Organization's 2020 Decade of Healthy Aging Report. https://www.who.int/publications/m/item/decade-of-healthy-ageing-baseline-report
- Alumnus *Nilam Ram* has taken up his new position as Professor at the Departments of Psychology and Communication at Stanford University. His current projects include examinations of age-related change in children's self- and emotion-regulation; patterns in minute-to-minute and day-to-day progression of adolescents' and adults' emotions; and change in contextual influences on well-being during old age. He is developing a variety of study paradigms that use recent developments in data science and the intensive data streams arriving from social media, mobile sensors, and smartphones to study change at multiple time scales.
- Fellow *Meltem Yucel* received a Psychology Department Graduate Teaching Award and a Psychology Department Graduate Research Travel Award. She was also a finalist at the Society for Research in Child Development's Student and Early Career Council Poster Competition. Her website PsychResearchList received a Commendation from the Society for the Improvement of Psychological Science (SIPS). PsychResearchList aims to increase access to academia by sharing resources and research opportunities with scholars at all levels. In less than a year after its creation over 12,000 people from 77 countries visited the website and made use of these resources. Check it out here: https://www.psychresearchlist.com/

LIFE Zurich

- *Christine Dworschak* has joined LIFE as a fellow (see p. 15 for more info).
- Alumna *Laura Jagoda* has received the 2020 Research Award of the "Schweizerische Tinnitus Liga" for her dissertation.
- Faculty *Andreas Maercker* has been selected to be a Senior Fellow of the Krupp Institute of Advanced Study at the University of Greifswald in northeastern Germany in the summer semester of 2022.

Newly hatched chick (*Gallus domesticus*)

Source: David Aubrey / Science Photo Library / UIG

Frequently used acronyms in LIFE

CRTD: Center for Regenerative Therapies Dresden

DIW: Deutsches Institut für Wirtschaftsforschung [German Institute for Economic Research]

DZA: Deutsches Zentrum für Altersfragen [German Centre of Gerontology]

FU: Freie Universität Berlin

HU: Humboldt-Universität zu Berlin

LIFE: International Max Planck Research School on the Life Course

UM: University of Michigan

UVA: University of Virginia

UZH: University of Zurich

MPIB: Max-Planck-Institut für Bildungsforschung [Max Planck Institute for Human Development]

Source: Food and Drink Photos / UIG

LIFE Newsletter

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Aim of the newsletter
The LIFE newsletter encourages collaboration and interaction among people within the LIFE program. It provides an information platform where fellows, alumni, and faculty members can learn more about each other's research, and identify colleagues with similar interests and possible projects for collaboration.

Contributions
Please send contributions, suggestions, and input to the editor.

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