

Heisenberg Research Group

Socioemotional Development and
Health Across the Lifespan

Head: *Michaela Riediger*



Research Team 2014–2016

Sandra Düzel (MPI for Human Development, Berlin, Germany),

Michaela Riediger (MPI for Human Development and Freie Universität Berlin, Germany; as of 03/2017: Friedrich Schiller University Jena, Germany),

Antje Rauers (09/2015–02/2017: Freie Universität Berlin, Germany; as of 03/2017: Friedrich Schiller University Jena, Germany)

Overview

The Heisenberg Research Group “Socioemotional Development and Health Across the Lifespan” seeks to contribute a more differentiated understanding of the interplay of socioemotional and health development across the lifespan. To meet this aim, we conduct interdisciplinary research projects with national and international cooperation partners. Current research projects investigate associations between emotional experiences and competencies with health, spanning an age range from childhood to very old age. We use multiple methods, among them mobile phones, to assess experiences—such as events, behaviors, feelings, or thoughts—at the moment of their occurrence and within the context of a person’s everyday life. This method is combined with the monitoring of physiological parameters, such as physical activity, cardiac functioning, or hormonal processes, and laboratory-controlled experimental paradigms and behavioral observations. The research group is part of a cooperation of the Freie Universität Berlin and the MPI for Human Development and is partly funded by the Focus Area DynAge and a Heisenberg stipend awarded to Michaela Riediger by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG), RI 1797/3-1. At the Freie Universität Berlin, the group is associated with the Division of Health Psychology. It started its work in September 2015. Below, we describe three ongoing research projects of our group.

When Bad Moods May Not Be So Bad: Valuing Negative Affect is Associated With Weakened Affect-Health Links

Previous research has suggested that people with high levels of negative affect, both in terms of intensity and frequency, tend to experience poorer physical health and lower levels of psychosocial functioning (e.g., less social integration). Much of this work, however, has overlooked how appraisals and valuations of those affective experiences may moderate these links. Individuals may differ in the extent to which they value particular affective experiences; and individuals who are better able to see that negative emotions are not just unpleasant, but may at times be helpful, meaningful, and appropriate in certain contexts, may show dampened links between daily experiences of negative affect and poorer health and well-being. Together with our collaborator Gloria Luong (Colorado State University, Fort Collins), we investigated this hypothesis using data from the *Multi-Method Ambulatory Assessment* (MMAA) project. The MMAA project is an ongoing longitudinal research endeavor in cooperation with Max Planck Fellow Gert G. Wagner and was initiated in the Max Planck Research Group “Affect Across the Lifespan,” which concluded its work in December 2014 (see pp. 231–240). The Heisenberg Research Group continues this work. In the MMAA

project, we developed a new measure called the *Positive and Negative Affect Valuation* scale. This scale assesses the frequency with which people value a variety of positive (e.g., joy, interest, contentment) and negative emotions (e.g., angry, downcast, nervous) as pleasant, helpful, appropriate, and meaningful experiences. We examined the extent to which these affect valuation measures may moderate known links between affective experiences and physical health and psychosocial well-being in a lifespan sample of 365 community participants ranging from 14–88 years of age. Affective experiences were assessed in participants’ daily lives, using mobile-phone-based experience sampling. Measures of physical health included both self-reports (e.g., number of health conditions) and objective measures (e.g., hand grip strength). Psychosocial functioning was assessed with self-reports of emotional health problems and social integration. We found that the more people valued negative affect, the weaker were the associations between their average daily experiences of negative affect and poorer health (total number of health conditions, health complaints, physical well-being, and grip strength) and psychosocial functioning (see Figure 1 for illustrations of some of these effects). Positive affect valuation, in contrast, did not moderate analogous affect-health associations in a similar manner

Key Reference

Luong, G., Wrzus, C., Wagner, G. G., & Riediger, M. (2016). When bad moods may not be so bad: Valuing negative affect is associated with weakened affect-health links. *Emotion, 16*, 387–401. doi:10.1037/emo0000132

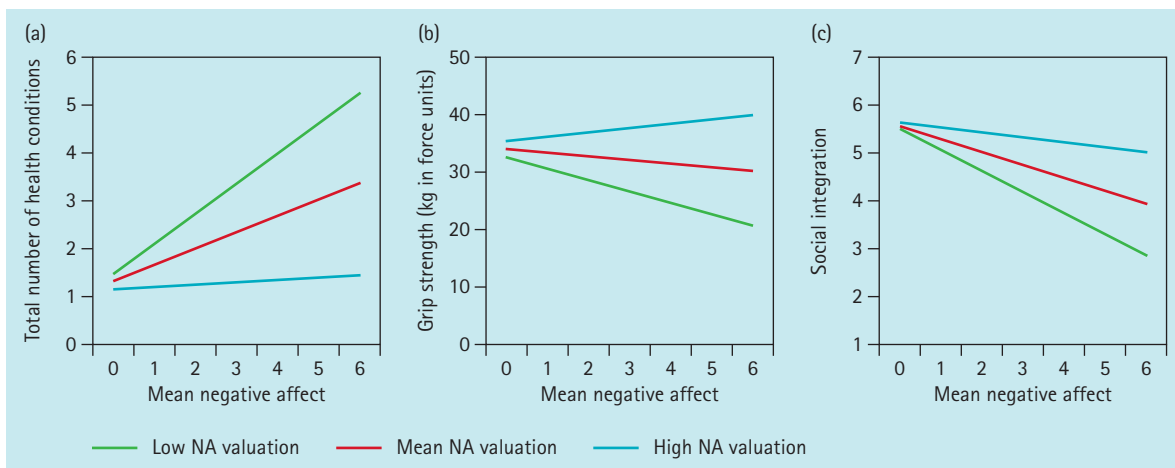


Figure 1. Negative affect valuation moderates the associations between experiences of negative affect and indicators of physical and psychological health and well-being [(a) total number of health conditions, (b) hand grip strength, and (c) social integration). The more individuals valued negative affect, the less pronounced (and sometimes even nonexistent) were the associations between everyday experiences of negative affect and self-reported and behavioral indicators of poorer physical and psychosocial functioning (adapted from Luong et al., 2016).

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to negative affect valuation (Luong, Wrzus, Wagner, & Riediger, 2016). This work builds on the literature because much of the work to date has focused on reducing negative affect or reevaluating how people appraise hassles as a means to promote health and well-being. Findings from this study suggest that how people evaluate and value different affective experiences, particularly negative ones, may provide new insights into understanding affect-health links.

Key Reference

Harden, K. P., Wrzus, C., Luong, G., Grotzinger, A., Bajbouj, M., Raters, A., Wagner, G. G., & Riediger, M. (2016). Diurnal coupling between testosterone and cortisol from adolescence to older adulthood. *Psychoneuroendocrinology*, 73, 79–90. doi:10.1016/j.psychoneu.2016.07.216

On the Interplay of Endocrine Functioning and Socioemotional Competencies From Adolescence to Old Age

This ongoing cooperation with various institutions inside and outside of Berlin is funded by the Focus Area *Disease in Human Aging: Dynamics at the Level of Molecules, Individuals, and Society* at the Freie Universität Berlin. Its central aim is to better understand the interplay between endocrine influences and mental health across the lifespan. We are particularly interested in the role of stress and sex hormones, which have been implicated in previous research as potential neurobiological underpinnings of mental health and disease. To date, both systems have mostly been investigated in isolation. Recent evidence, however, suggests it may be their interaction that is

particularly decisive in determining mental-health vulnerabilities. This evidence stems from younger individuals mostly. Not much is known about these interaction effects in other age groups. Furthermore, the mechanisms that link hormonal influences with mental-health outcomes are also not yet well understood. We propose that socioemotional competencies may represent one such pathway, that is, abilities related to experiencing, understanding, and managing socioemotional aspect of life.

As a first step, we addressed the most basic aspect of our working model, namely, the interrelation between the stress and sex hormone system, looking at their most prominently studied end products, namely, cortisol and testosterone, respectively. This work was conducted in collaboration with K. Paige Harden from the University of Texas at Austin (Harden et al., 2016). A widespread assumption in the literature is that the stress-reactive and reproductive systems are mutually inhibitory. Stress is assumed to impede reproductive function and vice versa. Contrary to this assumption, however, recent studies with adolescents and young adults found positive within-person associations of testosterone and cortisol, suggesting that the two hormone systems may serve complemen-

tary rather than antagonistic functions. The purpose of our analysis was to extend this research to older age groups as well in order to allow an age-comparative approach spanning the entire age span from adolescence to old age. This is important because both hormone systems undergo differential developmental change from adolescence to old age. Whereas during adolescence activities in both the reproductive and stress-response system increase after a period of childhood quiescence, sex-hormone levels decrease in middle-aged and older adults while cortisol levels increase. This raises the question whether the recently observed positive coupling may be specific to the investigated age range from adolescence to young adulthood.

To address this question, we used data from the MMAA project. The analytic sample included 292 individuals ranging in age from 11 to 88 years. Participants provided six ambulatory saliva samples in their natural life contexts on 2 consecutive days, each at waking up, 30 minutes later, and at 7:30 pm. From these samples, free testosterone and cortisol concentrations were determined. Descriptive information showed expected patterns of diurnal, age, and sex variations in the obtained hormone levels and thus demonstrated the reliability and validity of the ambulatory hormone assessments.

Regarding within-person associations between testosterone and cortisol, four findings are particularly noteworthy: First, on average, and across the entire sample, the within-person association between testosterone and cortisol was positive (which stands in contrast to the widespread assumption that the sex and stress systems are mutually inhibitory). Second, this positive association could not be fully explained by the partly parallel circadian rhythm of both hormone concentrations. It remained positive even after accounting for this diurnal trend. Thirdly, there was no evidence for age or sex differences in this association. Fourthly, even though the average association was positive, there was substantial between-person variation in all investigated age groups. In the future, it will be interesting to explore the reasons for these interindividual differences in testosterone-

cortisol coupling and their potential consequences for mental health and well-being.

Project "People in My Life"

The *People in My Life* project is an interdisciplinary innovation project funded by the Jacobs Foundation. This collaboration between Antje Rauers (Freie Universität Berlin; developmental psychology), Johannes Schöning (University of Hasselt, Belgium; computer science), and Sevasti-Melissa Nolas (Sussex University, UK; social psychology) aims at developing and testing a novel tablet application—the *People in My Life App* for use in social-work practice with children. The application uses touch screens with tangible objects to allow children to reenact real relationship dynamics.

A central aspect of social-work education and practice is to develop the ability to identify supportive relationships. Social workers draw on a range of existing tools to learn about important relationships in a child's life. A central objective leading the current development of the new application is to foster the inclusion of children's own perspectives in this process. In contrast to established expert-led practices for assessing relationships (e.g., genograms), the new application enables children to show and tell social workers their own relationship stories. To accommodate children as users, the application relies on three-dimensional symbolic figures that were specifically designed and created for this project (see Figure 2). This playful approach was chosen to help reduce



Figure 2. *People in My Life App* for use in social-work practice with children. The project *People in My Life* develops and tests an iPad application that encourages children to tell social workers about their close relationships.

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potential inhibitions in children and invite interactions between the child and social worker as they comment on the scenario. The movements of the figurines, their identities, and the conversation accompanying the entire activity are recorded and can be used for future review and analysis. The app is being developed consulting with the central user groups of the application—social workers and children. The conceptual framework of the project and the app design were informed by social workers, and the

results of the project will be subjected to the social-workers' evaluation at the end of the project. The application was tested with children aged 6–11 years in Brighton, UK. Children's direct feedback regarding the usability of the app will be analyzed using qualitative and quantitative data analysis. In addition to information regarding usability, we assessed a battery of covariates that will allow us to explore associations between dynamics of the children's play with sociodemographic characteristics, well-being, and health.

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(last update: Spring 2017)

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