

Appendix A: Case studies

1. New governance structure: towards one institute in which we share responsibility

Despite facing several challenges between 2018-2021, we believe we have grown as an institute and emerged more resilient than before. When we faced difficulties in filling key managerial positions, we became committed to organizing ourselves in a more sustainable manner. Also, our academic staff felt a growing need to increase collaboration and share expertise and inspiration with colleagues from the diverse disciplines within our institute. This resulted in the mutual decision by the Faculty and Institute Board to reform our governance structure. The process began in April 2021 with a report by Han de Winde (Faculty of Science), based on his interviews with members of our staff with managerial tasks. His key findings and recommendations were further discussed as a basis for the development of a new governance structure by a workgroup commissioned by the Dean, during several meetings between June and November 2021. This workgroup pursued the following aims: 1) an integrated vision, 2) a structure appropriate to the institute, 3) good leadership, 4) shared responsibility, 5) socially safe working environment, 6) transparency in business processes, 7) connection of organizational units, 8) grip on and insight into finances, 9) diversity in job profiles, and 10) broad support. In parallel, the ad interim Institute Board, the Unit Chairs, and the Institute Council were consulted about the ideas being developed. The governance structure was finalized following discussions with the Faculty Board and plenary feedback from employees in December 2021. After an interim period in 2021, the new Institute Board was installed in January 2022, and the daily boards of the various units were formed in the months thereafter (March-September 2022).

For the Institute Board, the most important modifications involved its increase in members and the diversification of roles, which better matches the size and the needs of the institute. The various portfolios of governance (overall strategy, HR, finance, teaching and research) were distributed over different members, to reduce the workload and increase effectiveness, as well as to share responsibility more widely. In alignment with this broader division of managerial tasks, professional support was expanded as well; institute managers for HR and for finance were hired, and the Institute Bureau was expanded with a secretary, a teaching manager, and a research policy advisor. Specific projects will from now on be appointed to project leaders and workgroups (e.g., for Recognition and Rewards, Scientific Integrity, Healthy Society), who receive temporary remuneration for their contributions. Finally, from April to December 2022, consultants from Ten Have Change Management were appointed to guide the transition to the new governance structure.

Broadly mimicking the new structure of the Institute Board, the daily boards of the six research units have also been expanded, and now have coordinators for each portfolio, as well as a PhD representative. The former full professor meetings have been replaced by monthly meetings between the Unit Chairs and the Institute Board. The teaching and research coordinators hold regular meetings with the teaching and research directors of the institute and are in contact with the local members of the various teaching (e.g., bachelor's, master's) and research committees (e.g., ethics, lab coordinators). With these changes, we have improved both the vertical and horizontal alignment between managerial staff within the institute and provided a platform for creating more coherence between units, and for the exchange of best practices. Finally, all managerial and committee roles are being formalized, and have a fixed duration, to further encourage rotation and broaden the staff's opportunities to develop their managerial skills.

2. Scientific Integrity Breaches: how we responded, lessons learned, changes made

In December 2018, our Institute's Scientific Director at the time received an internal complaint about possible irregularities in academic integrity relating to one of our former assistant professors. At that point, three close colleagues (two former PhD candidates and a postdoc) of the researcher in question felt sufficiently confident to report their concerns. They thus hoped to protect future students and staff and to help the university and academia in their efforts to self-regulate. The formal complaints about suspected breaches were filed in February 2019 and a short internal investigation by the institute and faculty, the Research Integrity Committee (CWI) of Leiden University, examined selected publications, grant and (medical) ethics applications in the light of the Leiden University Regulation on Complaints Regarding Academic Integrity and the Netherlands Code of Conduct for Research Integrity. The CWI concluded on 11 November 2019 that the following breaches occurred: (1) research with blood samples taken from test subjects without the approval of the medical ethics committee (METC), (2) negligence in listing co-authors, (3) data manipulation, and (4) submitting grant applications with incorrect (incomplete and manipulated) research data. In addition, the CWI advised retracting two publications. In a follow-up investigation 53 more articles were assessed of which seven were found to contain serious breaches and were also requested to be retracted from the respective journals. In October 2019, this former employee voluntarily resigned from Leiden University. Two of the three whistle-blowers are still employed at our institute today.

Several lessons were learned from the integrity breach that led our institute to address the impact of the event on our community, and to improve research operations. The whistle-blowers were given the opportunity to temporarily work abroad as a postdoc or to transfer to another unit.

Furthermore, other PhD candidates involved were offered the chance to switch supervisor. In response to the case, and how it had affected its working climate, the Cognitive Psychology Unit held so-called 'sensing sessions' in which a coach had extensive conversations with members (including PhD students and postdocs). These sessions had a strong therapeutic effect, because people felt free to talk openly in a safe environment. We organized a series of Q&A sessions with both directly affected staff as well as the entire institute, which transformed into a scientific integrity workgroup and reflective dialogue about the topic in our various research committees. This workgroup is still active today and meets on a regular basis to discuss ways to strengthen our research practices. So far, this has resulted in several concrete initiatives to further strengthen our research culture, such as a Scientific Integrity roadmap, an interactive workshop that will tour our units (see Accomplishments), and our novel research coordinators and PhD representative networks (see Case Study 1).

Although not formally, i.e., legally), acknowledged as integrity breaches, the case also involved several noted irregularities with compliance to our local ethics procedures such as conducting studies without approval or in a different way than reported. In addition, our institute was visited by the Inspection Health and Youth (IGJ) on 11 November 2020, who asked to be informed about the measures taken in response to the CWI report and wanted to discuss what general actions had been taken to prevent non-compliances in future WMO studies. Consequently, we revised several aspects of our local ethics procedure and improved the alignment with the Medical Ethics Committee (see accomplishments). For instance, to the satisfaction of the IGJ, we no longer review umbrella protocols. Importantly, we have initiated a project between our faculty and the Medical Ethics Committee (METC) to strengthen collaboration, align procedures, and improve decision making regarding ethics applications. Our faculty is now represented in the METC by two of our members, one of whom is from the Institute of Psychology.

3. Our Knowledge and Expertise Centres

Over recent years, our institute has begun to organize our translational research and expertise thematically in several scientific centres to implement knowledge utilization and outreach in alignment with our three cross-cutting research themes.

From anxiety disorders to an extremely unhealthy lifestyle, in the **Leiden University Treatment and Expertise Centre** or LUBEC (Learning and Development; Health and Well-being) children and adults are diagnosed and receive treatments that are in line with the newest scientific insights. The university has had an academic treatment centre for diagnosing and treating children and adolescents for over thirty years - the Ambulatorium, or Outpatient Centre - within the Faculty of Social and Behavioural Sciences. In 2018, our institute joined this centre and was moved to the adjacent multi-user building where Rivierduinen Regional Mental Health Centre is also located. The centre is an academic workplace and serves as a training and research institution. Students can observe the assessments and therapies being provided. Innovative treatments (e.g., for chronic and complex PTSD or psychosomatic conditions) are developed and tested. Postdoctoral education for healthcare and clinical psychologists (BIG) is one of the core activities of the centre.

The Knowledge Centre for Anxiety and Stress in Youth, or KAS (Learning and Development; Health and Well-being), was founded in 2021, with the aim of the early detection and treatment of stress and anxiety in children. Anxiety and stress are part of normal life but can also dominate the lives of children and adolescents to such an extent that it significantly hinders their development. KAS collaborates closely with their national and international network of scientists and clinical practitioners, schools, policy makers and families. This makes it possible to build bridges between all worlds (i.e., science – mental health care – policy – individual families) and test and apply the latest scientific insights in practice. KAS supports schools and youth mental health institutions in recognizing and dealing with stress and anxiety in children and adolescents by providing (i) workshops, (ii) reliable evidence-based information, and (iii) a helpline for teachers, parents, and mental health care professionals to discuss anxiety and stress on an individual basis.

The Knowledge Centre for Psychology and Economic Behaviour or KCPEG (social, cognitive affective decision making) was founded in 2020 with a donation from the Utopa foundation, to do research on societal issues that involve economic decision making, in collaboration with non-academic organizations, and to share scientific knowledge with practitioners and policymakers through training programmes, seminars, and other events. A case in point is the research programme on financial scarcity. Here our academic research aligns with the work of practitioners and policymakers in the domain of poverty reduction, debt relief, and social security. The centre not only studies the causes, mechanisms, and consequences of financial stress, but also monitors financial worries in the Netherlands, designs behavioural interventions to promote help-seeking for financial problems, and advice ministries on science-based policy. In this programme, we collaborate amongst others with the Ministries of Finance, of Social Affairs and Employment, and of Education, Culture, and Science, Money Wise, The 'Nederlandse schuldhulproute' (Dutch Debt Relief Route), 'Geldfit' (Money Fit), and Nibud.

The Leiden Healthy Society Centre (Health and Well-being), our most recent initiative, was launched in 2022 with the faculty and the Leiden Municipality. It focuses on interdisciplinary approaches (rather than monodisciplinary treatments) to enable efficient self-management and optimal long-term care for people living with a chronic condition, (intergenerational) solidarity, and the everyday organisation and financing of healthcare through states, markets, kinship and other social and institutional networks. Its research aims at the prevention, assessment and treatment of health and well-being problems in society. Populations vary from the general population and specific risk groups (e.g., working populations, lower SES) to those with particular somatic and mental health conditions. In this centre, we work with other knowledge and education organizations (e.g., Universities of Applied Sciences, Naturalis) and a large variety of societal partners in the local area of Leiden to connect the impact of scientific knowledge to concrete applications for the citizen, while asking also the citizens of Leiden for input on scientifically relevant topics (e.g., Citizen Science Lab).

4. Mobile sensor technology research and interventions

Our institute is characterized by the development of diverse behavioural methodological approaches, for example in digital tools, which have the potential to strengthen fundamental (neuro-)psychological research. Over recent years, staff of our various research units have developed a range of advanced smartphone-based and mobile sensing methods and analytic strategies for examining behavioural patterns outside the lab, in people's day-to-day environments. Several new tools are being developed that can provide health-related insights based on the day-to-day activities captured on the phone.

For example, the principles of brain functions in the digital world are unravelled by combining smartphone behaviours (e.g., tapping, swiping) with systems-level neuroscience and clinical applications. This has resulted in a spin-off company being set up by one of our staff for collecting and processing digital behaviour on the smartphone for commercial exploitation – QuantActions, Switzerland.

A personalized early warning system for depression, WARN-D, is being developed, funded by an ERC Starting Grant. Applying a network modelling approach, 2,000 young adults will be followed over 2 years, and, in addition to traditional mental health surveys every few months, will use smart-phone-based ecological momentary assessment (EMA) and collect temporal dynamics of variables such as mood, anxiety, stress, and impairment. Further, smartwatch-based digital phenotype data, such as sleep patterns, physical activity, sunlight exposure, and weight changes will be assessed.

Another example is the development of a mobile approach-avoidance task that assesses people's automatic approach and avoidance tendencies towards a variety of stimuli through time and force-based smartphone movement acceleration sensing. This open-source platform is easy to implement by other researchers and since its publication in 2020 has already informed research worldwide on topics like substance use disorders, emotions, food motivation, and outgroup perceptions during the Covid pandemic.

Funded by a LUF grant, together with the LUMC, a combined lab-based and smartphone-based diary and continuous glucose-sensing study examines the effects of stress and distracted eating in pregnant women. Smartphone daily diary studies are also used in several longitudinal youth cohorts to measure well-being, stress, mood, and social support before and during the COVID-19 pandemic (Gravity: Leiden Consortium for Individual Development, ORA: Learning Together). They are also combined with neuroimaging to examine the effects of childhood trauma on well-being and parent-child relations.

In collaboration with the Leiden Institute of Advanced Computer Science and TU Twente, new wearable technologies such as location trackers and proximity tags are used for monitoring children's behaviour in playgrounds, integrated with data obtained from the physical environment and playground policies to examine the physical, social and cultural affordances and obstacles of play behaviour.

In another large consortium (BENEFIT-for-all), aimed at promoting a healthy lifestyle, different forms of (financial) incentives are studied to improve daily physical activity levels that are also suitable for deprived, vulnerable and older populations. Data (N = 71.000) from a smartphone application from Way, which offers its worldwide customers gamified challenges with deposit contracts to increase step counts was analysed to answer questions such as for whom they work best, and under what conditions. Finally, mobile applications have been used as part of an innovative communication tool in placebo and nocebo effects for healthcare professionals, supported by an ERC Proof of Concept grant.