

Project title: Development and validation of a test battery to test empathy on- and offline in an ecologically valid manner

Project leader: Kim P. C. Kuypers

Function: Assistant Professor

Proposal:

The knowledge gap addressed by this research

Feeling and knowing what another one is feeling is a very important aspect of social behavior and of pivotal importance for a thriving society. In laboratory setting, empathy is commonly assessed by means of questionnaires like the Interpersonal Reactivity Index (IRI) or the Empathizing/Systemizing Quotient (EQ/SQ), or paradigms using non-verbal static stimuli, like the Reading the Mind in the Eyes Test or the Facial Emotion Recognition Test. While questionnaires cover different aspects of empathy like perspective taking and empathic concern, representing cognitive and emotional empathy respectively, it is mostly a trait measure. Studies aiming to assess the biological or cognitive underpinnings of state empathy will commonly make use of the aforementioned paradigms. The downside of these paradigms however is that they fail to cover the multidimensionality of empathy since the focus is on cognitive empathy. To date, there is a scarcity of tests suited to assess the multiple aspects of empathy.

A second issue is that research has also shown that the ability to perform well on empathy paradigms does not consequently mean that people are able to do this in real life possibly due to the high processing demands of a complex world containing a wealth of stimuli. While current paradigms usually make use of static stimuli of faces and/or bodies, empathy does not take place in a static 'social vacuum' and inclusion of more naturalistic and dynamic stimuli would aid in capturing the nature of this complex process.

Setting and Methods-Opportunities

You will have access to a virtual reality lab and computer specialists who can help to put your ideas into practice (programming paradigms), in addition, you will have access to EEG labs and be able to measure physiological data (like skin conductance, heart rate) and endocrine parameters (such as cortisol).

Impact: Who needs this knowledge?

- Researchers trying to study the neurobiological underpinnings of the multidimensional social construct 'empathy' (e.g. functional imaging; pharmacological challenge studies)
- Researchers trying to change social behavior in individuals with mental disorders (e.g. autistic spectrum disorder, depression) or in healthy, undiagnosed individuals with sub-optimal empathic skills

Why I propose this topic?

For years now I have been studying the effects of psychoactive drugs on social behavior and empathy and I have experienced the need to have access to more ecologically valid empathy measures. Therefore, in the last years I have designed two new paradigms (one virtual reality paradigm) assessing empathy in a more ecologically valid way.

What do I propose?

The candidate starts off with a literature search, making an inventory of the currently used paradigms. A next project will then be to design one or more paradigms assessing the multifaceted construct 'empathy'. This will be validated against well-established paradigms as identified in the review study. When validated, paradigms will be used in an online study and data from the online and laboratory study will be compared to test whether comparable/reliable data can be gathered when the paradigms are used online. This will result in minimally three manuscripts which will be submitted to peer-reviewed scientific journals.

Requirements candidate: I'm looking for someone who is very open, positive, with good communication skills, pro-active, and not afraid to come with own ideas. You should be able to express yourself in English, both in writing and speech.

Keywords: Empathy, paradigm, design, ecologically valid, validation, virtual reality

Top 5 selected publications:

1. Kuypers, K. P. C. (2017). Emotional Empathic Responses to Dynamic Negative Affective Stimuli Is Gender-Dependent. *Frontiers in Psychology*, 8(1491). doi: 10.3389/fpsyg.2017.01491
2. Kuypers, K. P. C., de la Torre, R., Farre, M., Pizarro, N., Xicota, L., & Ramaekers, J. G. (2017). MDMA-induced indifference to negative sounds is mediated by the 5-HT_{2A} receptor. *Psychopharmacology (Berl)*. doi: 10.1007/s00213-017-4699-1
3. Kuypers, K. P. C., Dolder, P. C., Ramaekers, J. G., & Liechti, M. E. (2017). Multifaceted empathy of healthy volunteers after single doses of MDMA: a pooled sample of placebo-controlled studies. *Journal of Psychopharmacology*, 31(5), 589-598. doi: 10.1177/0269881117699617
4. Kuypers, K. P. C., de la Torre, R., Farre, M., Yubero-Lahoz, S., Dziobek, I., van den Bos, W., & Ramaekers, J. G. (2014). No evidence that MDMA-induced enhancement of emotional empathy is related to peripheral oxytocin levels or 5-HT_{1a} receptor activation. *PLOS ONE*, 9(6), e100719.
5. Kuypers, K. P., Steenbergen, L., Theunissen, E. L., Toennes, S. W., & Ramaekers, J. G. (2015). Emotion recognition during cocaine intoxication. *European Neuropsychopharmacology*, 25(11), 1914-1921. doi: 10.1016/j.euroneuro.2015.08.012