

11th European Workshop on Clinical Reasoning and Decision Making

- Intuitive feelings in diagnostic reasoning and decision making –

22 – 24 March 2017



www.cdm-workshop.no

WELCOME

Dear Workshop Participants!

We welcome you to the 11th European Workshop on Clinical Reasoning and Decision Making!

We are very happy that we have the opportunity to continue the tradition of this workshop series. We have chosen “Intuitive feelings in diagnostic reasoning and decision making” as this year’s theme and are very pleased to see that this has attracted a great number of contributions that provide a wide diversity of perspectives on the topic.

We believe that this promises to be an inspiring and exciting workshop. By coming here, you have made it possible for us to assemble a very interesting program. We thank you for joining us and we wish you three days filled with intriguing presentations, lively discussions, and delightful social encounters.

Gisela Böhm and Elisabeth Norman

DICE Lab

(Bergen Laboratory for the study of decision, intuition, consciousness and emotion)

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Acknowledgements

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We also like to thank Solveig, Erlend, Annika and Sander for their wonderful support!

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TRAVEL INFORMATION

[Official website for tourist information](https://en.visitbergen.com/)

<https://en.visitbergen.com/>

[How to get here](https://en.visitbergen.com/visitor-information/travel-information/getting-here)

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ABOUT THE WORKSHOP

Workshop location

The workshop will take place in Faculty of Psychology, Department of Psychosocial Science. The venue is located in the middle of the city center. The address is Christiesgate 12, ground floor.

Internet access

Free wifi is available: uib-guest (login is required – follow given instructions)
Eduroam is also available.

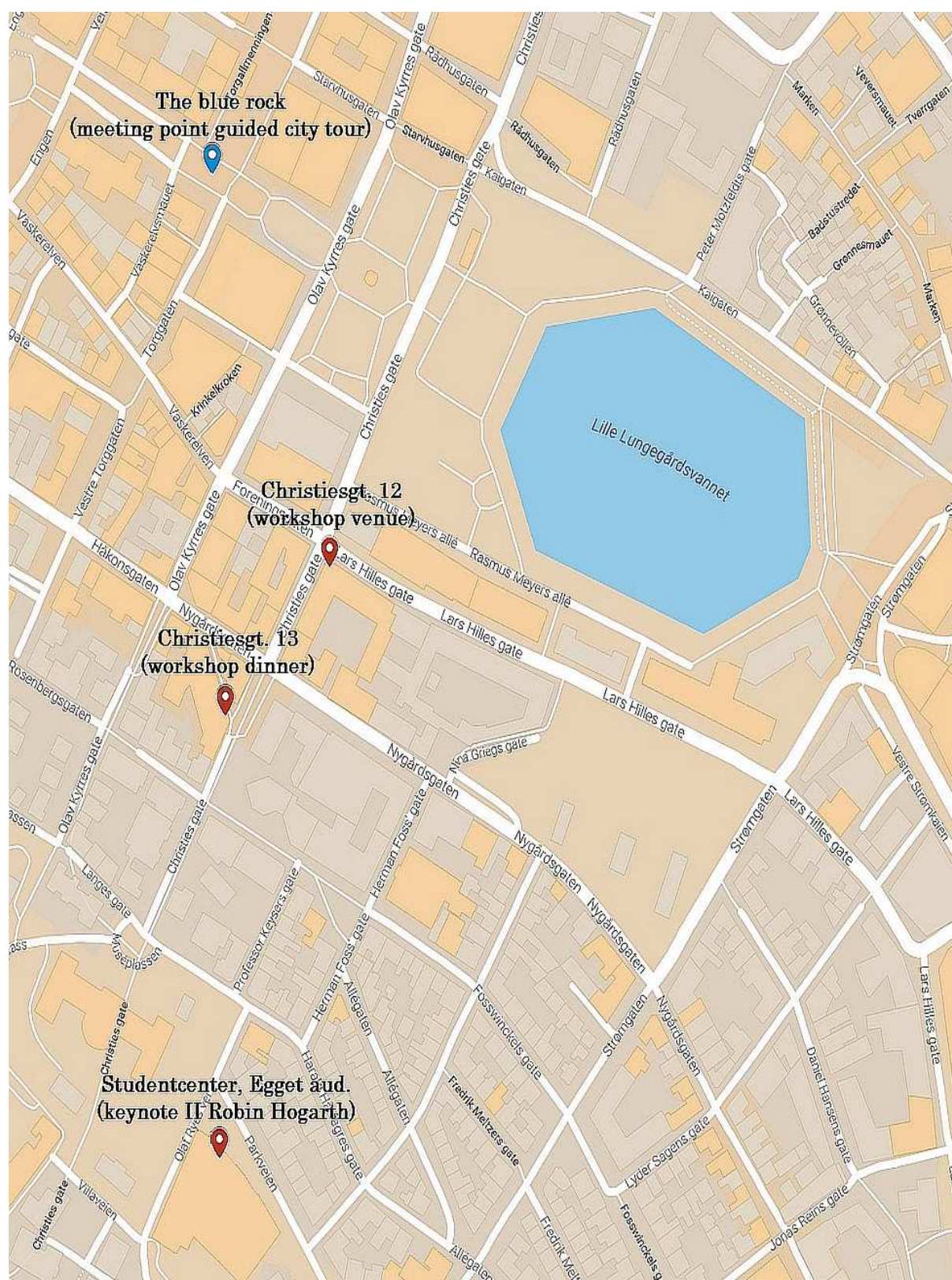
Participation fee

Registration is free of charge. We will supply coffee, snacks and lunch during the workshop.

Social activities free of charge for participants:

1. Wednesday at 17.30 Welcome reception, Christiesgate 12 (see map)
2. Thursday at 20.00 Workshop dinner, Christiesgate 13 (see map)
3. Friday at 17.00 – 18.00 Guided city tour, The blue rock (see map) (Limited places)

WORKSHOP MAP



PROGRAM WEDNESDAY 22 MARCH

Time	Topic	Room
15.00 – 16.00	Registration	Hallway
16.00 – 16.30	Welcome address by organizers, Prof. Norman Anderssen, Head of Department of Psychosocial Science and Prof. Jarle Eid, Dean of Faculty of Psychology	Aud 128
16.30 – 17.30	Keynote I - Cilia Witteman Radboud University, Nijmegen, The Netherlands Clinical Intuition: utility and pitfalls	Aud 128
17.30 Welcome Reception		

PROGRAM THURSDAY 23 MARCH

Time	Topic	Room
09.30 – 10.30	Oral Session I: Facets of intuition Chair: Cilia Witteman	Aud 128
09.30	Agata Sobkow SWPS University, Poland Structure of intuitive abilities and their relationships with intelligence and openness to experience	
10.00	Elisabeth Norman University of Bergen, Norway Intuition, decision making, and consciousness	
10.30 Coffee break		
11.00 – 12.00	Keynote II - Robin Hogarth Pompeu Fabra University and Barcelona Graduate School of Economics, Spain Intuition: Thoughts and speculation about engineering better judgments	Student center, (Egget aud) (See map)
12.00 Lunch break + coffee – Room 111, ground floor		
13.00 – 14.30	Oral Session II: Strategy and content of information search Chair: Norbert Donner-Banzhoff	Aud 128
13.00	Daniel Hausmann University of Zürich, Switzerland «Dr. Tweak» – An Active Information Search board game to investigate the determination of diagnostic processes	
13.30	João Niza Braga University of Lisbon and Indiana University A social cognitive approach to clinical gut: The impact of backward and forward inferences on psychotherapist's metacognitive confidence and information seeking strategy	
14.00	Margje van de Wiel Maastricht University, The Netherlands The role of knowledge and intuition in personnel selection decisions	
14.30 Coffee Break (Put up posters)		
15.00 – 16.00	Keynote III - Erik Stolper University of Maastricht, The Netherlands and University of Antwerp, Belgium Gut feelings of patients: Do they influence their general practitioner's diagnostic reasoning?	Aud 128
16.00 – 18.00	Poster session with refreshments	Hallway
20.00 Workshop Dinner in Christiesgt. 13 (see map)		

PROGRAM FRIDAY 24 MARCH

Time	Topic	Room
9.30 – 10.30	Keynote IV - Norbert Donner-Banzhoff University of Marburg, Germany When things seem to go wrong: Diagnostic error in primary care	Aud 129
10.30 Coffee break		
11.00 – 12.00	Oral Session III: Motivational influences on diagnostic reasoning Chair: Erik Stolper	Aud 129
11.00	Matthias Michiels-Corsten University of Marburg, Germany Second Thoughts In Diagnostic Decision-Making Of General Practitioners	
11.30	Sofia Jacinto University of Lisbon, Portugal and Indiana University, USA Diagnostic inference: No cure for correspondence bias	
12.00 Lunch break + coffee – Room 520, 5th floor		
13.00 – 14.30	Oral Session IV : Intuition and complex information environments Chair: York Hagmayer	Aud 129
13.00	Kirsti Malterud University of Copenhagen, Denmark and University of Bergen, Norway Processing complex information from a wide range of sources beyond simplistic models for diagnostic reasoning in general practice	
13.30	Margje van de Wiel University of Maastricht, The Netherlands The role of physicians' experience in experiencing gut feelings in diagnosing ambiguous cases	
14.00	Jakub Traczyk SWPS University, Poland The experience-based format of probability improves probability estimates in people with low numeracy.	
14.30 Coffee break		
15.00 – 16.00	Keynote V - York Hagmayer University of Göttingen, Germany Causal reasoning in clinical decision making - when does it make sense?	Aud 129
16.00 – 16.30	Concluding Discussion	Aud 129
17.00 – 18.00	Guided City Tour Meeting point: The blue rock (see map)	

INSTRUCTIONS FOR ORAL AND POSTER PRESENTATIONS

Oral presentation:

Each oral presentation has a time slot of 30 minutes. We want to encourage intense discussions. Therefore, each presenter is asked to not present for more than 20 minutes, leaving at least 10 minutes for discussion.

All rooms will be equipped with a computer (PC Windows) and projector.

Please send your presentation slides by March 20th to the following e-mail address:
CDM-workshop@uib.no.

We can then upload your presentation to the computer. Be present at your session room 10 minutes before the session starts

Poster presentation:

Each presenter will be assigned a space in the room for the poster session. Each presenter is responsible for putting up his/her poster at the latest during the coffee break preceding the poster session (14.30 – 15.00 on March 23rd).

Maximum poster size: 90 cm (width) x 130 cm (height)

DIN A0 portrait (84,1 x 118,9 cm) is a good standard size that may be used.

Concerning the layout, all lettering should be legible from at least 120cm away. Poster walls will be provided.

ABSTRACTS – KEYNOTE PRESENTATIONS

Clinical Intuition: utility and pitfalls

Keynote I - Cilia Witteman, Radboud University, Nijmegen

Day: Wednesday, March 22nd

Time: 16.30

Everybody, including all clinical professionals, uses their intuition; people are definitely not always good at being rational. And why not: If the learning that underlies intuition has been thorough, dedicated, and has taken place in representative situations with adequate feedback, then intuitions can be trusted. Of course such learning does not always happen, in which cases intuition leads astray. Still: making errors is not the prerogative of intuition; rational thinking may also lead to mistaken decisions. Often professional clinicians will combine the use of intuition with System 2, rational processes. I will illustrate these ideas with our own and others' research findings.

Intuition: Thoughts and speculation about engineering better judgments

Keynote II - Robin Hogarth, Pompeu Fabra University and Barcelona Graduate School of Economics

Day: Thursday, March 23rd

Time: 11.00

Location: Studentcenter, (Egget aud) (See map)

Taking the view that intuitive judgments result from experience with the environment, we stress the importance of specifying the structure of the environment in understanding the outcomes of intuitive processes. In particular we re-examine Hogarth's concepts of kind and wicked learning environments and show how they can be extended to account for many judgmental phenomena. Given this knowledge, we raise the issue of how to help people make more accurate intuitive judgments. As a specific example, we examine people's apparent difficulties in understanding and coping with the phenomenon of regression toward the mean and propose a simple heuristic that can lead to more accurate judgments.

The lecture is open for all - welcome!

Gut feelings of patients: Do they influence their general practitioner' diagnostic reasoning? The first step in the development of a gut feelings questionnaire for patients.

Keynote III - Erik Stolper, University of Maastricht and University of Antwerp

Day: Thursday, March 23rd

Time: 15.00

General Practitioners (GPs) recognize the role of gut feelings (GF) in their diagnostic reasoning , using a typical expression in their own language which refers to a bodily sensation. Dutch medical disciplinary tribunals consider the timely development of GF to be an element of the professional standard of doctors. Two kinds of GF emerge from a web of determinants: a sense of alarm (SA) and a sense of reassurance (SR). SA stimulates GPs to formulate and weigh up working hypotheses with a possible serious outcome . SR means that a GP feels secure about further management and course of a patient's problem, even though he/she is not certain about the diagnosis. GF arise from the interaction between a GP's knowledge and experience, and information about the patient, and can be understood as a kind of intuition. A consensus on seven statements about GF was the fundament for a short, validated questionnaire exploring GPs' GF at the end of the consultation.

But what about the GF of patients? Research suggests that the gut feelings of patients also matter in predicting serious health problems of patients and diagnostic reasoning of their physicians. The feeling of parents that there is something wrong with their child appeared to be a strong predictor for a serious disease. However, an instrument measuring patients' GF is lacking. Therefore, we aim to compose and validate a GF questionnaire for patients. We made a first step by exploring the experience of GPs and practice-nurses with their patients' GF.

What phrases and expressions do patients use in their communication when they experience a GF? What is the significance of patients' GF for GPs and practice-nurses? What kind of action do the last ones take after acknowledging a patient's GF?

We interviewed GPs (N=12), practice-nurses (N=16) and practice-secretaries (N=5) in single and in group practices in the Netherlands and Belgium. A thematic content analysis of the verbatim text was performed.

We found that the participants recognized patients' GF and we collected many different wordings and expressions used by patients to express their GF. We found some indications that a patient's GF influences a GP's decision-making process. Participants took their patients' GF seriously, particularly when expressed by a parent or care provider about their child. Because of their knowledge and experience, the GF concept of GPs seemed to be richer than the patients' GF concept but not fundamentally different. In Belgium, patients seemed to be more reserved to communicate their gut feelings to their GP. Flemish GPs said that patients often expressed their gut feelings in a non-verbal way.

The first step in the development of a GF questionnaire for patients was successful. Next purposefully selected patients will be interviewed about their GF. Based on all data we might be able to compose a short questionnaire to determine the presence or absence of a patient's GF.

When things seem to go wrong: Diagnostic error in primary care

Keynote IV - Norbert Donner-Banzhoff, University of Marburg

Day: Friday, March 24th

Time: 09.30

In the area of therapeutics and management, reflections on past errors usually focus on conditions and causes preceding an event and possible improvements to avoid future incidents. Regarding diagnostic decision making, the main difficulty is to decide, whether an error has occurred at all. In the case of wrong-side surgery or prescription of drugs despite contraindications, wrongdoing is usually obvious. In these cases a behavioural clinical standard can be clearly described.

In diagnosis, however, the clinical standard there is difficult to define. This is even more pronounced in generalist settings such as hospital emergency departments or in primary care. In patients with identical presenting complaints, additional characteristics or symptoms may lead to widely differing disease likelihoods. As a result, appropriate next diagnostic steps differ considerably from patient to patient. Under these circumstances, the comparison standard would consist of a potentially unlimited algorithm.

Despite these difficulties, clinicians confronted with an undesirable outcome need support for their critical reflection on a case and their own diagnostic decision making. To this end, I have developed a heuristic to distinguish true diagnostic error from so called pseudo error – the Diagnostic Error Reflection Heuristic (DER-Heuristic).

I will present results from a qualitative survey of 30 primary care reporting cases of possible diagnostic error. Moreover, in an ongoing project we are evaluating the usefulness of the DER-Heuristic. The distinction between true diagnostic and pseudo error is important, because in the latter case learning, i.e. change of future clinical behaviour, is not indicated, it may even lead to over-diagnosis, over-treatment and waste of resources.

Causal reasoning in clinical decision making - when does it make sense?

Keynote V - York Hagmayer, University of Göttingen

Day: Friday, March 24th

Time: 15.00

Proponents of clinical case formulations claim that analyzing the factors and mechanisms causing and maintaining a client's problem is useful for deciding on a treatment. But respective evidence is scarce and the studies yielded mixed findings. At present, it is unclear whether and under which conditions a causal analysis leads to better outcomes. In the talk I will present a summary of theoretical arguments why causal considerations should improve decisions on treatments and show that findings from experimental research on causal decision making provide supportive evidence. Then I will review studies investigating the treatment utility of causal knowledge and reasoning. Finally, I will propose the causal explanation based decision making framework, a structured decision making process describing how causal knowledge and reasoning should be involved in treatment choice. This framework may guide future research on the role of causal considerations in treatment choice and may help us to better understand when a causal analysis will result in better outcomes for patients.

ABSTRACTS – ORAL PRESENTATIONS

Structure of intuitive abilities and their relationships with intelligence and openness to experience

Agata Sobkow, SWPS University of Social Sciences and Humanities

Oral Session I: Facets of intuition

Day: Thursday, March 23rd

Time: 09.30

Recent theories point that intuition is not a unitary construct (Glöckner & Witteman, 2010; Gore & Sadler-Smith, 2011; Hogarth, 2010). However, there is little empirical research exploring the structure of intuition. As notable exception, Pretz et al., (2014) revealed four types of intuition: Inferential, Affective, Holistic-Big Picture, Holistic-Abstract. Importantly, only preference for Holistic intuition predicted better performance in clinical judgments. However, in these studies intuition was treated as preference and measured only by self-reports. We argue that intuition is rather an ability and individual differences in intuitive abilities should be measured by objective cognitive tests (similarly to intelligence test).

In present study, we defined intuition as an ability to implicitly learn and detect cognitive patterns, to subconsciously combine information in complex ways, and to make correct judgments basing on fragmentary cues or limited information. Participants (N = 206) completed four cognitive tests measuring different aspects of intuitive processing (Remote Associates Test, Westcott's Test of Intuitive Abilities, Artificial Grammar Learning, Serial Reaction Time task), two measures of intelligence (Verbal Analogies, Raven Advanced Progressive Matrices), as well as two self-reported measures of intuition (Myers–Briggs Type Indicator: Intuition; Sense of Intuition Scale) and six subscales of Openness to experience (from NEO-PI-R).

Confirmatory factor analysis revealed three types of intuitive abilities: *Coherence & Insight*, *Implicit Learning* and *Subjective Intuitive Abilities*. Importantly, all three types of intuition were predicted by different variables. *Implicit learning* was predicted by Raven Progressive Matrices (6.6% of explained variance), *Coherence & Insight* was predicted by Verbal Analogies and Openness: Aesthetics (20.6% of explained variance). *Subjective Intuitive Abilities* was predicted by components of Openness: Fantasy, Action and Ideas (59.4% of explained variance)

In summary, our research demonstrated that intuition is not unitary and there are at least three separate types of intuitive abilities that can play distinct roles in decision making.

Intuition, decision making, and consciousness

Elisabeth Norman, University of Bergen

Oral Session I: Facets of intuition

Day: Thursday, March 23rd

Time: 10.00

Intuition is often defined as fast, effortless thinking that is largely automatic and does not involve conscious deliberation. Its counterpart is analytical thinking, which is regarded as a fully conscious, effortful cognitive process. The distinction between the two forms of thinking, often referred to as «System 1» versus «System 2», is widely accepted in decision making research. However, within the field of consciousness research, the view of consciousness as a dichotomous phenomenon has been challenged. For instance, it has been suggested that the fully implicit/unconscious and the fully explicit/conscious are end points on a continuum, and that a range of different degrees of consciousness exist between the two extremes and can potentially be identified (Cleeremans & Jiménez, 2002). In this talk, I focus on one particular form of conscious experience, namely «fringe consciousness», which can be regarded as conscious in one sense and unconscious in another. It is a «metacognitive», consciously felt experience assumed to reflect unconscious information (Baars, 1988; James, 1890; Mangan, 1993, 2001; Norman, Price, & Jones, 2011). Common examples include "feelings of rightness/wrongness", "feelings of familiarity" and "feelings of knowing". I show how fringe consciousness can be studied within implicit learning, which can be seen as involving a form of complex decision making (e.g., Norman, Scott, Price, & Dienes, 2016). Furthermore, I demonstrate how knowledge acquired in traditional implicit learning experiments cannot always easily be classified as either purely explicit or purely implicit. Instead, some properties of acquired knowledge may be conscious while others are unconscious (Dienes & Scott, 2005). Drawing on empirical examples from an ongoing series of implicit learning experiments I show that fringe consciousness represents a useful framework for understanding intuitive decision making.

«Dr. Tweak» – An Active Information Search board game to investigate the determination of diagnostic processes

Daniel Hausmann, University of Zurich

Oral Session II: Strategy and content of information search

Day: Thursday, March 23rd

Time: 13.00

Up to now, there is only little knowledge whether and which individual strategies determinate individual diagnostic processes (irrespective of well known contextual variables). Based on a pilot study, we had been able to identify three plausible stopping models for medical diagnoses: Pattern Matching (PM), Confidence Threshold (CT), or Request Confirmation (RC).

Which of these three models can best explain the stopping of information search within a diagnostic process (and therefore the transition to treatment)? Are there differences between professional groups (e.g. psychotherapists versus physicians) or regarding the level of experience?

Medical scenario: Eight male patients in the waiting room of a toxicological emergency center suffer from one (out of four) severe toxication, or are healthy. Aim: To diagnose and treat each patient accurately as well as economically. According to the paradigm of Active Information Search (AIS), the participant (physician or psychotherapist) is free to choose his or her preferred actions for each patient (free in extent and order): To ask for or test as many symptoms (out of 10), to diagnose, to treat, whether to request confirmation about the initiated treatment or not, and finally to discharge the patient.

Due to individual behavioral patterns, model fits are calculated for each of the three models (PM, CT, or RC). Detailed results will be presented from an ongoing data acquisition.

Depending on underlying preferred strategies, diagnostic processes can individually vary in the need of information (e.g. amount of retrieved symptoms), the proceeding of information (e.g. order of retrieved symptoms), whether probabilities are incorporated or not (e.g. heuristic versus threshold approach), as well as initiated treatment is checked for success or not (e.g. using a Request Confirmation strategy). In addition to *interindividual* differences, it remains open, why some participants vary their diagnostic behavior *interindividually*.

A social cognitive approach to clinical gut: The impact of backward and forward inferences on psychotherapist's metacognitive confidence and information seeking strategy.

João Niza Braga, University of Lisbon and Indiana University

Oral Session II: Strategy and content of information search

Day: Thursday, March 23rd

Time: 13.30

The non-decomposable nature of a psychotherapy session favours intuitive judgments (see Hammond et al., 1987), which may have lingering effects on psychotherapists' conceptualization of patients' conditions. Specifically, the feeling of rightness associated to intuitive judgments (e.g., Koriat, 2012, Thompson et al., 2012) is likely to lead to overconfidence and to the use of a confirmatory hypothesis testing strategies. This, may compromise therapists' evaluation of their clinical (intuitive) judgments.

This tendency could be moderated if besides backward inferences (causal explanations) therapists were requested to make forward inferences (predictions) based on the same session information. Forward inferences are associated to more uncertainty than backward inferences (Hogarth, 2010), and are expected to be associated to an open mindset (e.g. Fiedler et al., 2005). Therefore, forward inferences could decrease overconfidence in the clinical judgment and promote non-confirmatory information seeking, thus contributing to therapy effectiveness.

The present study manipulates, within participants, inference direction: backward vs. forward. Psychology students were presented with two fictional cases and were asked to make clinical judgments, consisting on estimating the probability of causal factors for client's symptoms for one case; and the probability of several future effects of the client's symptoms for the other. After each clinical judgment, participants rated their feelings of rightness, and the overall confidence after all judgments. Finally, information seeking strategies were measured through the ratings of likelihood of several diagnosis; the selection of additional symptoms, from a list, to better understand the case; and the time spent reading additional information.

As expected, results suggest that backward inferences lead to higher confidence and more confirmatory information seeking strategies than forward inferences. Interestingly, backward inferences lead to more diagnostic information seeking strategy. Further research on the mediator role of confidence and therapists' metacognition on information seeking strategies are discussed.

The role of knowledge and intuition in personnel selection decisions

Margje van de Wiel, Maastricht University

Oral Session II: Strategy and content of information search

Day: Thursday, March 23rd

Time: 14.00

In making decisions about whom to hire for a job many HR professionals rely on their intuitions obtained in interviewing candidates. However, research has shown that standardized analytical approaches in personnel selection best predict performance. This research-practice gap may be partly based on a lack of knowledge. We aimed to unravel the role of knowledge and intuition in hiring decisions and hypothesized that participants with relevant knowledge rely on test results, whereas participants without this knowledge rely on interview impressions. Two experiments were conducted in which participants rated four types of candidate profiles with either positive or negative test results and either positive or negative interview summaries on their suitability. In experiment 1, 31 HR students were compared to 31 control students. In experiment 2, 29 HR students, 28 HR professionals and 26 control students rated the profiles, performed two ranking tasks and filled out the Preference for Intuition-Based Hiring Scale (PIHS) and a knowledge questionnaire. Experiment 1 confirmed our hypothesis showing an interaction between profile type and group in which HR students relied more on the test results than the interview summaries whereas this was reversed for the control students. This interaction effect was also found in experiment 2, HR professionals performing similar as control students. The HR students ranked the profiles more often in line with test results, performed better on the knowledge questions than the other groups, and scored lower on the PIHS. Regression analyses showed that the higher participants' PHIS score the more they relied on the interview summaries and neglected the test results. These outcomes indicate that knowledge of personnel selection influences HR decision making by valuing test results over more subjective interview information. To bridge the research-practice gap both advancing knowledge of HR professionals and insight into their intuitive reasoning are needed.

Second Thoughts In Diagnostic Decision-Making Of General Practitioners

Matthias Michiels-Corsten, University of Marburg

Oral Session III: Motivational influences on diagnostic reasoning

Day: Friday, March 24th

Time: 11.00

Diagnostic tests are usually intended to examine the patient's medical condition in diagnosis or treatment control. But tests may serve further purposes which are not yet fully understood in diagnostic decision-making.

Do GPs' order tests for other motives than diagnosing disease or monitoring treatment?

We recorded 295 primary care consultations in 12 practices. 134 consultations comprised at least one diagnostic episode. GPs were asked to reflect on their own diagnostic thinking in interviews for every single case. Qualitative and quantitative analyses were applied with focus on the GPs' cognitive processes during diagnostic decision-making.

In this explorative study GPs clearly stated to apply some tests for other reasons than the diagnostic process. Tests were for instance ordered to prevent the feeling of regret. Anticipation of regret grew even stronger when GPs already experiences regret in a similar case. Furthermore we identified patient reassurance, patient requests and organisational or strategic issues as arguments for test ordering.

Beside the diagnostic process as it should be, "second thoughts" play a critical role in clinical decision-making and test ordering. They might even represent an initial factor in a cascade of interventions leading to overdiagnosis. How GPs might control these influences provides a crucial factor for further research, practice and teaching.

Diagnostic inference: No cure for correspondence bias.

Sofia Jacinto, University of Lisbon and Indiana University

Oral Session III: Motivational influences on diagnostic reasoning

Day: Friday, March 24th

Time: 11.30

Mental health practitioners should categorize behaviors representative of a mental health disorder as situational symptoms and not as dispositional traits (DSM-5). However, people tend to show a correspondence bias, to draw dispositional inferences from behavior, while neglecting alternative contextual explanations (Gilbert & Malone, 1995). But [are](#) able to discount (insufficiently) the role of the implied trait in the production of the behavior when a condition present in the situation could clearly induce the behavior by itself (Gilbert 2002). This correction process has been shown only with situational conditions that by themselves would never bring to mind the inferred trait. However, psychotherapy contexts may posit the case where a situational condition such as a disorder diagnosis may not only afford a competing causal account of the behavior (situational symptom), but may also activate the implied trait. This case has never been contemplated.

Three studies were conducted to explore this question. We presented trait-implicative paragraphs that also matched a disorder diagnosis (e.g., lazy – depression), and manipulated the behavior account (neutral, physical impairment, disorder diagnosis). Main dependent measures were participants' trait ratings of the implicated traits (complemented by ratings of behavioral perceived stability, control and attribution). Studies 1 and 2 show that the disorder diagnosis lead to almost no trait discount. The first two studies may be accounting by the lack of knowledge from our participants about the nature of mental disorders. Study 3 replicates this finding with clinical psychologists suggesting that expertise does not decrease the correspondence inference. Together these studies suggest that, contrary to the spirit of the DSM-5, mental health disorders are not perceived as alternative behavior explanations. When a situational explanation may also activate the trait, people neglect its explanatory role for the behavior and make correspondence inferences. Further research should explore the causal links underlying this confound.

Processing complex information from a wide range of sources beyond simplistic models for diagnostic reasoning in general practice

Kirsti Malterud, University of Copenhagen

Oral Session IV : Intuition and complex information environments

Day: Friday, March 24th

Time: 13.00

The term 'diagnosis' includes the process of identifying illness by examining someone, as well as the conclusion of this process, often expressed by the name of a disease. Diagnosis is rapid and simple when the doctor immediately recognizes a pathognomonic sign, but a diagnosis may also be the outcome of arduous clinical reasoning, based on different sources of knowledge, leading to one or more hypotheses to be tested, sometimes under substantial uncertainty. Diagnostic reasoning is often different in general practice compared to specialist care. Patients present undifferentiated complaints, often in the early stages, or as indications of harmless, self-limiting conditions. Multimorbidity is prevalent, with symptoms from different diseases mixing, merging and staging in aberrant formats. In this presentation, we shall consider the wide range of information sources and discuss processes of medical diagnosis in the particular context of general practice.

The general practitioner (GP) utilizes and decodes information from different sources in order to solve the diagnostic plot. Situated knowledge developed by this interpretative activity is framed by the specific perspective and gaze taken by the doctor. The list of available answers, organized as the taxonomy of diagnoses, serves as a filter for possible interpretations. You simply do not look for categories which are not on the menu. Diagnoses are socially constructed entities and diagnostic reasoning involves advanced cognitive skills. The epistemological challenge in clinical practice is to recognise and process biomedical, experiential and narrative knowledge without replicating dichotomous ideas about diagnosis as either facts or fiction, either ration or intuition, either body or mind in a simplistic and linear mode. The art of medicine contains the successful processing of information from multiple and various, often unexpected sources. We shall present a model for analysis and understanding of this web of information, suggesting different theoretical approaches.

The role of physicians' experience in experiencing gut feelings in diagnosing ambiguous cases

Margje van de Wiel, University of Maastricht

Oral Session IV : Intuition and complex information environments

Day: Friday, March 24th

Time: 13.30

Medical expertise is the result of cognitive processes in which patient information and knowledge and experience of physicians interact. Gut feelings may arise from automatic, non-analytical processes and help physicians to navigate in complex and uncertain diagnostic situations. It is unknown in what way gut feelings develop with experience. The present expertise study shed light on this issue by comparing three groups of participants with different experience in general practice (16 experienced physicians, 16 trainees, and 16 clerks) while they diagnosed six patient cases. All cases were considered ambiguous, based on real patients, and elicited different types of gut feelings (sense of reassurance and/or sense of alarm). A clear expertise effect was found for elaborateness of case processing (i.e., clerks were more elaborate), but not for diagnostic accuracy and the gut feelings experienced. The cases were rather hard to diagnose and elicited different types of gut feelings within all three groups of participants. Case effects were strong while manipulations of patient information had minor effects on the experienced gut feelings and did not interact with participants' experience. This corroborates the case-specificity of knowledge in diagnostic reasoning. The study underscores that the interactions between the available patient information and the knowledge and experience of a physician determine the cognitive processes and outcomes. For training and continuous development this means that physicians must be made aware of their cognitive processes, act upon their uncertainty and sense of alarm, and need to seek feedback on their gut feelings in order to learn from their experiences.

The experience-based format of probability improves probability estimates in people with low numeracy.

Jakub Traczyk, SWPS University of Social Sciences and Humanities

Oral Session IV : Intuition and complex information environments

Day: Friday, March 24th

Time: 14.00

Recent research has demonstrated that people have difficulties in understanding health-related numerical information such as the probability of a disease or side effects. These difficulties are especially pronounced in people with low numeracy. In this study, we tested a novel method of presenting information about probability that is based on direct experience of events rather than observing numbers. Participants were randomly assigned to one of two conditions. In the frequency condition, participants were presented with 24 binomial distributions consisting of a target stimulus “X” and a distractor stimulus “.” in the form of odds (the distribution “7 X 13” was an example of the probability of 35%; the target stimulus “X” was presented 7 times in a 20-stimulus distribution). In the experience-based probability condition, participants observed a stream of randomly arranged target and a distractor stimuli displayed sequentially at the center of the computer screen. For example, the distribution “7 X 13” was presented as a series of 7 targets and 13 distractors displayed centrally one by one in random order. Participants had to estimate the probability of “X” in each trial and to complete a numeracy test. Presenting probabilities in the experience-based format improved the accuracy of probability estimates in comparison to the frequency format. Moreover, the experience-based format significantly improved probability estimates in participants with low numeracy while it made no difference in the group of more numerate participants. We conclude that presenting probabilities in a novel experience-based format helps less numerate people make more accurate judgments.

ABSTRACTS – POSTER PRESENTATIONS

POSTER 1

Debiasing Clinical Decision Making: A Meta-cognitive Intervention to Tackle Cognitive Biases among Clinical Psychologists

Presenters: Anna Boormans & Anne van Uittert, Radboud University, Nijmegen

The notion that cognitive biases can cause diagnostic errors has become so widely known that many techniques have been proposed to eliminate or reduce these biases among clinicians (Norman & Eva, 2010). Two commonly proposed techniques to debias psychological clinical decision making are the technique of informing clinicians about the existence of biases and achieving understanding of what they are (Redelmeier, 2005), and the implementation of metacognitive regulation (Croskerry, 2013). Although there has been much discussion about implementing these debiasing techniques, these have not been accompanied by experimental test results (Montibeller & Winterfeldt, 2015). Therefore, we propose the development and implementation of an intervention based on the principles of disseminating information and meta-cognition, to eliminate the most common cognitive biases among clinicians. The intervention will consist of four different groups (one group receiving an informative workshop about cognitive biases, and metacognitive reminders after each client session, one group receiving only the informative workshop, one group only receiving the metacognitive reminders, and one control group), to test the effect of information dissemination and metacognitive regulation on debiasing clinical decision making.

POSTER 2

The role of a non-decomposable task in the integration of a diagnosis scheme and the effects in confirmation bias

Presenter: Marina Ferreira, Radboud University, Nijmegen

In a psychotherapy session, it is very difficult to decompose the flux of information in its parts. Such non-decomposable task, favors holistic and intuitive judgment processes (Hammond et al, 1987), which constrains the interpretation of subsequent information along the lines of the firstly activated schemes (Eyal et al., 2011). Thus, we hypothesize that non-decomposable tasks favor primacy effects and often lead to confirmatory biases. In contrast, a task decomposed and analysed in its parts is expected to elicit a more deliberative reasoning, counteracting primacy effects and leading more often to disconfirmatory strategies of hypothesis testing.

To test these hypotheses, in two studies, we presented participants with an audio excerpt of a fictional client describing her depression symptoms, manipulated the decomposability of the excerpt. In the non-decomposable condition, participants were presented a case (without interruptions) and asked a final global clinical judgment (risk to develop psychopathology based in all behaviors). In the decomposable condition, participants heard the case in 6 smaller parts, completing, after each excerpt, an interim judgment about the likelihood of developing psychopathology based in that specific behavior. After the 6 excerpts, participants made the same final global clinical judgment. Following this, participants rated the likelihood of three possible diagnoses. We manipulated within-participants the order of the presentation of depression symptoms in the beginning (depression scheme activated) vs. end (no activation of depression scheme) of the case.

Results show that when a scheme is activated (depression symptoms presented in the beginning), understanding the case in a non-decomposable way leads to higher ratings only to depression, than participants in the decomposable condition, which gave higher ratings to two diagnosis. This suggests that making a non-decomposable task lead to a more confirmatory bias. Implications to therapy session will be discussed.

POSTER 3

The effect of attachment styles and therapists' interpersonal skills on the therapeutic alliance

Presenters: Marjolein Hartgerink & Rineke Bossenbroek, Radboud University, Nijmegen

The therapeutic alliance between therapist and client is an important predictor of treatment outcomes (Martin, Garske, & Davis, 2000). Attachment theory might be a suitable framework to understand and explore the therapeutic alliance, as the therapist may act as an attachment figure to the client in times of distress (Bowlby, 2008). Securely attached clients may form good quality alliances with their therapists, whereas insecurely attached clients may avoid forming a bond with their therapists (Smith, Msetfi, & Golding, 2010). Furthermore, therapists who have experienced their attachment figures as rejecting or neglectful during childhood may find it more difficult to form a good quality alliance with their clients (Mikulincer & Shaver, 2007). In studying the relationship between attachment and the alliance, the interpersonal skills of the therapist should also be taken into account (Bordin, 1994). If the client is insecurely attached, but the therapist is able to implement basic interpersonal conditions of therapeutic relationships (Anderson, Ogles, & Weis, 1999), the therapeutic alliance may still be of high quality. However, the effect of attachment styles and therapists' interpersonal skills on therapeutic alliance has never been studied (Smith, Msetfi, & Golding, 2010). The current study tries to overcome this gap by examining the extent to which both clients' and therapists' self-reported attachment styles and therapists' interpersonal skills are related to the therapeutic alliance.

POSTER 4

Refer or not to Refer: The Effect on Therapeutic Alliance in Specific Phobia

Presenters: Arne Kluft & Joppe Klein Breteler, Radboud University, Nijmegen

During treatment, one of the most effective ingredients of psychotherapy is the therapeutic alliance, predicting treatment success. Especially, alliance during early sessions between therapist and client is vital for the treatment outcome. In line with this, the clients perception of therapeutic alliance as early as in the assessment positively predicts therapeutic alliance across treatment. However, in the Netherlands, it is common that a therapist diagnoses a client, but refers the client to another therapist for treatment. Yet, it is not clear if diagnosing and referring might impact the client's' improvement. In the proposed study, we will investigate the effects of referring a client after assessment on therapeutic alliance and treatment outcome in specific phobia. Especially during exposure therapy for anxiety disorders, therapeutic alliance is mandatory, because clients have to be motivated to confront their fears. To ensure a controlled setting, in a clinic specialized on anxiety disorders, 5 therapists will diagnose clients as usual. If patients are diagnosed with a specific phobia, they will be randomly assigned to either treatment from the therapist that also diagnosed the client or to treatment from another therapist within the clinic, which did not diagnose the client. After each session, therapeutic alliance and anxiety symptoms will be assessed using questionnaires. It is expected that for clients that are assessed and treated by the same therapist, developing the therapeutic alliance and symptom reduction will take place earlier during treatment than for clients referred after assessment to another therapist for treatment. These insights could be used to improve the efficacy of the mental health care system by means of establishing a stable therapeutic alliance.

POSTER 5

Towards a more objective treatment choice in depression through neurophysiological measures

Presenters: Lars Jaswetz & Edwin Schenkel, Radboud University, Nijmegen

Whilst using the well-known diagnostic cycle by de Bruyn (2003), most of the studies on decision making focus on the first three steps (i.e. 1. What symptoms does the patient have?, 2. How do we classify his/her symptoms? 3. What are the causes?) while the last step (i.e. 4. Which treatment does the patient get?) seems to be highly neglected. Still, it is known that the first three steps are prone to errors in decision making, such as biases or subjectivity (e.g. Elstein & Schwarz, 2002). Therefore, it is possible that decisions in the last step are also prone to these factors. To reduce these detrimental influences and improve clinical decision making, the present study proposes a model integrating neurophysiological measures in order to provide an objective guideline for treatment choice. Specifically, in line with recent findings (Drysedale et al, 2017) we will show that connectivity and functionality patterns evident in major depression disorder predict treatment outcome. These patterns, represented as different biotypes, will be matched with treatments which have been found highly effective for each particular biotype versus control groups receiving treatment as usual. The aim is to show that using objective measures will provide a better treatment outcome compared to subjective treatment choices.

POSTER 6

Sexy Freud: Influence of Expectation about the Clinician's Appearance on Therapeutic Alliance Establishment

Presenter: Bas Kooiman, Behavioural Science Institute, Radboud University, Nijmegen

Psychologists have been found to frequently make use of prototypic diagnosing: making a diagnosis by matching a client to a self-constructed model client representative of a disorder (Garb, 2005). Little to no research, however, has been conducted regarding the prototype the client has constructed for a psychologist, and how this influences his or her diagnosis and treatment.

Focusing on therapeutic alliance establishment – the area in diagnosis and treatment expected to be affected most – this poster reviews found literature on an important factor of the clinician prototype – the appearance – and posits an experiment on how the expected appearance of the clinician constituted by the client influences the establishment of a therapeutic alliance during their first session.

Used variables that constitute the appearance will be: age, gender, perceived intelligence, perceived successfulness, ethnicity, weight, clothing, physical fitness and hygiene. Participants will be asked to rate these variables on a composited questionnaire regarding what they perceive as attractive and what their expected appearance of a clinician constitutes of. Afterwards they will have the first session with a clinician, after which they rate the appearance of the clinician and fill in a questionnaire on the experienced therapeutic alliance establishment, the latter of which is also done by the clinician. Two clinicians will be selected based on expected high and expected low deviating appearance difference from expected general appearance of a clinician. Found results can be analysed to answer whether there are common factors constituting the expected clinician's appearance, and to what extent a deviation from an expected appearance of the clinician is a predictor of the establishment of therapeutic alliance (within-subjects analysis).

With this information, more insight can be given on the appearance of the clinician: what decisions to take into account before coming to work appearance-wise, and how this influences client-clinician therapeutic alliance.

POSTER 7

The Impact of DSM Transitions on Clinical Decision Making for Bipolar Disorder

Presenter: Nicole Peulen, Radboud University, Nijmegen

Recently the DSM-5 has been introduced, replacing the DSM-IV. There have been changes in categorization and criteria for various disorders in the DSM, under which bipolar disorder. Clinicians use the DSM for categorizing and diagnosing clients and their symptoms. Therefore, it is probable that DSM transitions have an impact on clinical decision making by these clinicians. The described study will focus on the impact of DSM transitions for clinical decision making in relation to bipolar disorder. The study has a qualitative design, exploring the use of the DSM-criteria (DSM-IV and DSM-5 respectively) by clinicians in diagnosing clients. Furthermore, it examines the differences in clinicians' view of bipolar disorder following the changes of bipolar criteria in DSM-5 compared to DSM-IV, and the differences in proposed treatments after setting a diagnosis.

Author information: Nicole Peulen is a second year Behavioural Science Research Master student at the Radboud University, Nijmegen (The Netherlands).

POSTER 8

The Rubber Hand Illusion: A Potential Step in Exposure Therapy for Treating OCD

Presenters: Vu Bich Phuong & Anna-Maria Sjölund, Radboud University Nijmegen

The rubber hand illusion (RHI) is generated when the participants observe a rubber hand being stroked in synchrony with their real hand, while the latter is hidden from view. This procedure gives rise to a feeling of embodiment of the rubber hand and has been found to work for about 75% of people. An earlier finding has shown that in a non-clinical sample, participants reported significantly more OCD-like disgust when the rubber hand was contaminated and they experienced the illusion, compared to when they did not. Here we hypothesise that this finding will generalise to a clinical sample of OCD patients. We propose to examine if the RHI can be used to ease the transition to actual skin exposure for people with contamination-related OCD. Participants will be divided into two groups: the experimental group will receive repeated exposure to the RHI in combination with exposure and response prevention (ERP), and the control group will receive only ERP. We expect to find that the experimental group will respond to the treatment faster than the control group, because the RHI offers a “bridge” to reduce anxiety when being exposed directly to the contamination.

POSTER 9

Influence of Feedback on Therapeutic Alliance

Presenters: Flavia Spagnuolo & Gerrieke van de Woestijne, Radboud University, Nijmegen

An important predictor of therapy success is the therapeutic alliance between client and therapist. However, therapeutic alliance can be difficult to achieve. Previous studies investigated whether regular feedback from clients on therapy sessions could improve therapeutic alliance, but the results of these were not conclusive. We propose a randomized control trial, in which one group of patients ($n = 50$) will receive treatment as usual and the other group ($n = 50$) will receive treatment as usual accompanied by a feedback discussion after each therapy session. Participants will be recruited at an institute for community mental health. Since previous studies showed mismatches between therapist-reported and client-reported alliance, it is valuable to also include the therapist's view. Thus, both clients and therapists will report their outcome expectations, perceived therapeutic alliance and therapist empathy through questionnaires for each weekly therapy session. The therapist and the client will then discuss the feedback. We hypothesize that discussion of feedback will improve therapeutic alliance, as measured by both client-reported and therapist-reported alliance and consistency between these two assessments.

POSTER 10

Social Media Use as a Sublimation Technique for Treatment of Narcissistic Personality Disorder

Presenter: Mandy Spartman, Radboud University, Nijmegen

Patients suffering from narcissistic personality disorder (NPD) generally have an inflated sense of their own importance and a deep need for admiration. Current treatment for NPD centers around psychotherapy but its efficacy has not been systematically or empirically investigated so far. Moreover, the grandiosity and defensiveness that characterize NPD militate against acknowledging problems and vulnerabilities, which makes engagement in any form of psychotherapy difficult. Sublimation techniques may be an alternative technique to consider in treatment of NPD. Rather than motivating patients to resolve problematic behavior as is the case in psychotherapy, sublimation motivates patients to channel these socially unacceptable or undesirable impulses and to transform them into socially acceptable actions or behavior. Social media use may be relevant in this regard as received likes, comments and shares might - at least partly - fulfill patients' need for admiration, leading to a decrease in symptoms. My poster proposes a study that can examine the effects of positive response to patients' content sharing through social media on patients' scores on the Personality Diagnostic Questionnaire (PDQ-4) NPD scale.

POSTER 11

Viewing each presenting client as an individual, not a set disorder: The importance in recognizing the wide variety of final classifications possible from a similar symptom.

Presenter: Brendan Walsh, Radboud University, Nijmegen

Many recent studies and reviews of the past decade have highlighted the high levels of co-morbidity and the occurrence of overlapping symptoms in many mental disorders today. This has influenced not just the reformation of the Diagnostic and Statistical Manual of Mental Disorders in its present state (DSM-5), but also encouraged the development of alternative methods of diagnosis and classification such as the Network Perspective, which views mental disorders as complex networks of interacting symptoms. By highlighting the interchangeable nature of many presenting symptoms in terms of the eventual outcome of clinical diagnosis, the importance of oftentimes adopting a treatment to suit the client individual's needs rather than prioritizing a treatment aimed at addressing a set disorder can be shown.

The present study aims to examine through a longitudinal framework, at least 200 individual case studies of clients presenting with the similar symptom of mild anhedonia and ascertain the final diagnosis of each of them, examining also the treatment administered to them, as well as the outcome of this treatment. It is expected that the resulting data will uncover not just a wide variance (over at least 15 different types) in terms of final diagnostic classification in nature of disorder, but also the potential misdiagnosis (in this case more probably over-diagnosis of depression) to be found in a number of the cases, due to inaccurate intuition of behalf of the clinician from initial assessment. Data will be collected from cases from across four mental health facilities, two in the Netherlands, one in Sweden and one in Ireland. Cases will be reviewed across a five years period as well as follow-ups on the clients' current well-being after discharge, should they consent. Should results prove consistent with the aforementioned hypotheses regarding widespread variance of final classification and the presence of misdiagnoses, it could help further illustrate the importance on behalf of the clinician of exercising caution when considering whether an individual may truly be worthy of a diagnosis of a specific disorder.

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