How do we understand other humans?

Albert Newen (albert.newen@rub.de)
Institut für Philosophie II, Ruhr-Universität Bochum
Universitätsstr. 150 44801 Bochum

Abstract

In last two decades we had an intense discussion about which theory best describes how we understand other human beings. I will argue that neither Simulation Theory nor Theory-Theory nor Interaction-Theory do offer us an adequate analysis. Despite the fact that they highlight some relevant aspects, the generalization made by each theory cannot do justice to the varieties of social understanding we can actually observe. Thus, we need an alternative theory. I suggest the person model theory as an alternative and will defend it by distinguishing two question which we need to distinguish in the debate: 1. which epistemic strategy do we use to register the others' mental state: simulation, theory-based inferences, interaction or direct perception? I argue for a multiplicity view that we in fact to use all these strategies depending on the context (Newen 2015). But the focus of this paper is question 2: How is prior information – that we usually rely on when understanding others – stored and organized: in form of a folk psychological theory or as narratives? My answer is that we essentially rely on person models to understand others. Person models can be implicitly represented (person schema) or explicitly available (person image). A person schema is an implicitly represented unity of sensory-motor abilities and basic mental phenomena related to one human being (or a group of humans). We also develop person images while this is a unity of explicitly registered mental and physical phenomena related to one human being (or a group). My aim is to show that the person model theory is more powerful than the alternative candidates.

Keywords: person model; person image; person schema; understanding others; simulation theory; Theory-Theory; interaction theory;

Introduction: Two central questions[1]

The question "How do we understand other human beings?" has to be divided into two subquestions, the first of which is: What epistemic strategy do we adopt to register or assess the other's cognitive states? To reach any kind of assessment of the other we need to obtain information within a concrete situation. The second question is: Once obtained, how is this prior information stored and organized? This second aspect is important, because we always rely on prior background knowledge in our assessments of others. One main defect of the debate thus far has turns on the failure to distinguish these two questions. The debate between the two classic positions simulation theory (ST) and Theory-Theory (TT) can roughly be described as a misunderstanding stemming from their dealing with different questions: while ST insists that the use of a simulation strategy is the standard epistemic strategy, Theory-Theory insists that the prior information we have about others is organized as a folk-psychological theory. Concerning their main claims, these accounts are not in opposition. The opposition only becomes visible if for each account we consider their favoured answer to the complementary question. The classic opposition between ST and TT can then be described as follows: TT claims that the epistemic strategy is to rely on theory-based inferences, and that the prior information is organized as a folk-psychological theory; whiles ST claims that the epistemic strategy is to put oneself into the other person's shoes which draws only on my own experience as the basis of data for simulation, leaving it open as to whether these data form a theory.

In this paper I would like to put aside the question about the epistemic strategy we use to understand others and focus on the question of how the prior information is organized which we usually rely on to understand others. I think that we can deliver a much better theory of understanding others if we focus on the organization of prior information shaping our understanding of others, especially since I argued elsewhere that we actually use a multiplicity of epistemic strategies to understand others depending on the context (Newen 2015). If the latter is true, the opposition of the classical theories is no longer existent. But the new focus has been ignored with important consequences. So far almost all examples of understanding others where described in a way that we observe another human being whom we do not know and thus we do not rely on any background knowledge of this person. But very often we actually deal with persons we know quite well and furthermore, even when we understand unknown persons we heavily rely on background information about types of persons (e.g. students, manager) we have intense experience with. None of the theories suggested so far, does take this dimension into account, or if so, then only marginally. The person model theory is proposed to change this situation.

The organization of relevant background knowledge about others

Most of the time, we are interacting with people about whom we have a lot of background knowledge—family members, colleagues, friends, etc. Furthermore, we have background knowledge about the general needs of human beings, the special needs of students, homeless people, etc. It seems clear that we are essentially relying on this type of knowledge when we understand others. There may be very short period as a newborn baby when we start from scratch,

[1] Main parts are taken form Newen 2015 while the theory will be developed further.

armed only with certain inborn minimal mechanisms such as neonate imitation. Even the social smile developed with two months is dependent on external stimulation and learning processes, and babies very quickly start to react selectively towards familiar and foreign individuals. They also expect a typical behavioural interactive pattern from the caregiver. If a mother stops reacting intuitively through normal facial expressions and gestures, and instead reacts with a "still face," then the baby quickly starts to cry (Bertin & Striano, 2006; Nagy, 2008). The baby is irritated by the unexpected pattern of reaction. How, then, are all these different types of background information about the other organized and used in social understanding?

Are we organizing our prior knowledge in folk-psychological theories?

The question of whether we are organizing our knowledge according to folk-psychological theories has received a number of different answers. According to TT, this is exactly what happens. In understanding others we are relying on folk psychological rules such as: 'If she desires an ice-cream and she believes that she can get one with her money at the cafeteria, then she will go to the cafeteria.' No doubt folk psychological rules, organized according to a belief–desire psychology, are an important instrument for understanding others; but they are by no means the only one. Often it is sufficient to know the conventions in a society to understand what someone is doing and will do next, e.g., if someone is in Japan and he enters a restaurant, he will first take off his shoes, then take a seat, and then will be asked to order. So, seeing someone entering a restaurant who looks like a guest (and not a waiter) allows us to expect a specific conventionally regulated sequence of behaviour. If one has a liberal notion of folk-psychological theory, then we may add such behavioural conventions into that theory. But even then the question remains whether our understanding of others always relies on knowledge organized as a folk-psychological theory. A counterexample can be proposed by reference to cases of basic intuitive understanding: e.g., the still-face reaction by the caregiver, instead of a typical smiling facial expression and gestural response, makes the baby start to cry (as we saw above). There is thus an intuitive recognition of basic emotions like fear, anger, happiness, or sadness. This may rely on inborn emotion recognition mechanisms, or ones learned very early, which may be evolutionarily anchored, since recognizing such basic emotions is essential for survival (Griffiths, 1997; Panksepp, 2005). There are two ways in which the counterexample might be blocked: (i) It could be maintained that some folk-psychological theories are inborn (Baron-Cohen, 1995) and that intuitive understanding such as face-based recognition of emotion already involves a theoretical package. The problem with this line of reasoning is that the notion of theory, stretched that far, starts to look very implausible. A theory is a constituted by a minimal package of systematically interconnected beliefs; and even if a belief is understood in a liberal way such that it does not presuppose linguistic representations, it remains highly questionable whether basic cases of faced-based recognition can be characterized as a systematically interconnected set of beliefs. The standard descriptions of face-based recognition of emotion (e.g., Goldman, 2006) highlight the relevance of mirror neuron mechanisms and characterize the underlying mechanism as a rather basic and partially independent pattern-recognition processes, and thus as not forming a theory. A defect in recognizing fear does not automatically lead to a defect in recognizing other basic emotions like happiness or sadness. (ii) A more promising move is to claim that the folk-psychological theory is learned (Gopnik, 1993). This view is compatible with some basic processes of understanding which do not yet form a theory, but are developed into one as they are integrated step by step into a systematically organized body of knowledge. This is a plausible and to some extent empirically grounded view (Gopnik & Meltzoff, 1997, Newen & Vogeley 2003). One shortcoming of this view, however, is that its proponents tend to appeal to examples which have a strong focus on general folk-psychological rules, such as: 'All humans need to drink, thus if someone picks up a glass in the kitchen, he intends to pour in some liquid to drink'. This neglects a very important phenomenon: namely that we mostly interact not with complete strangers but with persons we know at least partly and often very well. For example, if Michael observes his son in the kitchen grasping a glass he does not appeal to the folk-psychological rule at all, since he knows that his son—despite his education—still only drinks from a bottle when at home, and that if he takes up a glass it is just because he wants to use it as part of his training in magic tricks. This already indicates that all theories canvassed thus far have a blind spot: so far it seems simply to have been neglected that we rely extensively on knowledge of properties of individuals, which is organized as belonging to one specific individual (the son, the partner etc.) or to a group (e.g., students, manager). The general worry concerning the organization of the knowledge according to TT can also be expressed as follows: How we are able to apply a general theory of typically human features in a specific social situation? If we want to integrate our prior background knowledge of persons as individuals or as belonging to a group, e.g., a profession, then we can characterize the organization of this knowledge as person models. Person models of individuals and groups are by far the most important source of understanding others, I will argue, and since they involve specific knowledge, they are the natural candidate to enable adequate deployment of more general knowledge of human psychology in concrete everyday situations. It remains to be discussed, then, whether person models have the status of a folk-psychological theory or not. To adumbrate my line of argument: no doubt some elaborate person models are clearly systematically interconnected sets of beliefs, but not all of them have to be, because some person models only involve very sparse and basic properties which are not highly interconnected.

The Person Model Theory

Before expounding the new account, let me highlight two main criteria of adequacy of any plausible candidate theory and some open questions. (i) It should account for two levels of understanding others, namely intuitive understanding and inference-based understanding. This was first clearly discussed by Gallagher (2001), while Goldman (2006) described it in his distinction between low-level and high-level mindreading. What, we may then ask, would be an adequate way to establish this distinction? (ii) We learned from Gallagher (2005) that we should distinguish understanding others by observation from understanding by interaction.

There are also a number of open research questions that can potentially be answered when developing the alternative account: (a) What is the relation between understanding oneself and understanding others? Here the ST claims that understanding oneself is the basis for all understanding of others, while TT is neutral; Carruthers, for example, has famously argued that understanding others is the source of our self-understanding (Carruthers, 2009). (b) What is the relation between understanding persons and understanding objects or situations? (c) How can we best account for the difference between understanding a well-known person, on the one hand, and a complete stranger, on the other?

The alternative theory, which promises to deal with these open questions, is the person model theory. The central claim is that we organize our prior knowledge used to understand others in person models, and that accounting for our way of using person models is the most informative factor for analyzing our everyday understanding of others. A person model is a unity of properties or features which we represent in memory as belonging to one person or a group (resp. type) of persons. To account for the difference between two types of understanding others (intuitive versus inference-based understanding), I suggest that there are two types of person models in use: implicit person models, which are called person schemata; and explicit person models, which are called person images. Very early in life we develop person schemata: a person schema is an implicit person model and can typically be described as a unity of sensory-motor abilities and basic mental phenomena realized by basic representations and associated with one human being (or a group of humans), where the schema functions typically without any explicit considerations and is activated when directly seeing or interacting online with another person. A person schema is thus the unity of implicitly available information about a person which is thus not easily accessible to report but is normally used in a situation. In other words, a person schema is the basic unit that enables a know how for dealing with another human being relying on social perception and interaction. Person schemata can be developed step by step into person images. A person image is a unity of explicitly represented and typically consciously available mental and physical phenomena related to a human being (or a group of people). Thus, a person image is the unity of rather easily and explicitly available information about a person, including the person's mental setting. Both person schemata and person images can be developed for an individual, e.g., one's mother, brother, best friend, etc., as well as for groups of people, e.g., medical doctors, homeless people, managers, etc.. Furthermore, person models are created for other people but also for oneself. In the case of modelling oneself we can speak of a self-model which we develop implicitly as a self schema and explicitly as a self image. Thus, we have a variety of person models.

Person models are characterized here as memorized units of person features ignoring the difference between long-term or short-term memorization. Person models are distinguished from the result of understanding in a situation, which may be either a person impression mainly relying on person schemata, or a person judgment mainly relying on person images. Let me illustrate a clear virtue of adopting the distinction between person schema and person image by reference to the fact that it can account for the difference between intuitive understanding and inference-based understanding of others.

Person schemata

In detail, then, what are person schemata? A person schema is an intuitively formed, implicit model of a person; it is a memorized unity of characteristic features of a person including facial features and expression, voice, moving pattern, body posture, gestures, and other perceivable features of a person. The function of clustering these features is to allow us to evaluate a person very quickly in a situation according to evolutionarily important aspects: is she familiar, dangerous, aggressive, helpful, attractive? The evaluation is either expressed in a type of interaction, or it can simply be memorized in an implicit unitary structure for future retrieval, including recognizing the person and activating the former evaluation. The main access to others in everyday life is perceiving a person and forming an impression (see the review by Macrae & Quadflieg, 2010). To form a person impression, (i) we typically pick up these basic features by means of a quick look, even when seeing a person for the first time, where (ii) most features are directly associated with socially relevant information, and (iii) they are clustered at the level of perceiving the whole person. Let me offer some support for all three characteristics of the process of forming a person impression in a situation which is memorized as a person schema:

(i) *Quick evaluation even with parsimonious information:* Evaluations of threat (which is of strong evolutionary relevance) can be made on the basis of an exposure to an unfamiliar face lasting as little as 39 ms (Bar, Neta, & Linz, 2006). If the exposure to the unfamiliar face lasts about 100 ms, we are able to evaluate likeability, trustworthiness, competence, and aggressiveness with subjective reliability levels that are similar to those generated under longer viewing times (Willis & Todorov, 2006).

(ii) *Most features are associated with socially relevant information*: looking into the face is a very rich source of information about a person. Between 3 and 7 months of age, infants learn to recognize the face of the mother and to distinguish it from faces of strangers, and they start to categorize people according to emotional expression and sex (Nelson, 2001). One important source of information which children use from 4 months onwards is the gaze direction of a person, it having been shown that they can distinguish a direct from an averted gaze (Vecera & Johnson, 1995). Starting from 9 months infants learn to register the joint attention of the infant and an adult as directed towards an object (Cleveland & Striano, 2007). Thus, on the basis of gaze interaction they evaluate whether joint attention towards an object has been established or not, and learn to direct the attention of the other if necessary (Tomasello, 1999). Between the ages of 9 and 18 months, children start to use gaze information to register the goal of the action of the other human: they attend immediately to the eyes when the intentions of an actor are ambiguous (Phillips, Baron-Cohen & Rutter, 1992).

Let me now pick out some results based on studies of adults which illustrate the informational value of single cues. To start with the facial expression: in emotion recognition, highly informative features include knitted eyebrows for sadness, a smile for happiness, and a frown for anger (Ekman 1972**;** Ekman 1999). To prevent this remark giving the wrong impression, I here highlight some individual features and will argue in the next step that they are part of an integrated view at the level of persons. Salient biological visual markers allow us to easily identify the "big three" categories in person perception (Brewer, 1988**;** Fiske & Neuberg, 1990), i.e., sex, race, and age. In the same way, we can illustrate the high informativeness of single features such as body posture: if the other is bending her head in a communicative context, this is unconsciously registered as signalling sympathy (Frey, 1999). One important data source here is biological motion detection as investigated by point light studies. If a person has lights on hands, feet, and ankles, and some other significant parts of the body, we can videotape his bodily movement in the dark. Such artificial pure biological movement information allows us to register social features, e.g., we can recognize emotions (Ambady & Rosenthal, 1992) and attribute personality features (Heberlein et al. 2004) on the basis of seeing dynamic movements alone. Furthermore, there is evidence that social information can be taken from the combination of gesture and body posture alone. In an intercultural study (Bente et al. 2010), a real interaction between a boss and an employee (played by two students of one type of culture) was videotaped for a short period. From the real interaction, all the information was taken away except gesture and body posture. The question to be addressed was, what can we read from seeing body postures and gestures of idealized wooden puppets representing the real interaction, abstracted from facial information, speech, clothing, etc. The interactions were filmed with students from UAE (United Arabic Emirates)**,** Germany, and the United States; and the test subjects were also drawn from all three countries. With the wooden puppet version, it was shown that we can determine whether the people in the scene are nervous or not, as well as the dominance relation, i.e., we can see who is the boss. This is an interculturally shared social understanding of otherwise culturally variable cues of body posture and gesture (since US students moved a lot while UAE students moved rarely). We can also perceive the level of friendliness in the interaction, although we are good at this only for our own culture. Furthermore, there are many more complex culture-dependent visual features that we use for evaluating the other—e.g., physical attractiveness, where attractive people are evaluated as possessing more desirable characteristics than their less attractive counterparts, a phenomenon that has been labelled the beauty-is-good stereotype **(**Dion et al., 1972). These kinds of stereotypes are especially connected with racial classifications: African Americans are stereotypically assumed to be lazy, criminal, and uneducated, but also musical and athletic (Devine & Elliot, 1995), whereas Asian Americans are considered to be intelligent, industrious, conservative, and shy (Lin et al., 2005). Most observers in our culture assume that people with stylish hair and extravagant clothing are highly extraverted (Borkenau and Liebler 1992). We live with a lot of these deeply culturally anchored stereotypes, and they are often applied without the perceivers' intention or conscious awareness (Macrae & Bodenhausen, 2000). This last aspect points towards the third aspect of person schemata. They are unities of characteristic features integrated at the level of persons. All these singular features are integrated into person models which enable us to develop detailed and extensive expectations of behaviour.

(iii) *Integration of characteristic features at the level of perceiving the whole person*: Although I have presented evidence that some single features are very salient for transferring social information, there is also much evidence that these features are normally combined with a variety of others to form an integrated impression of a person which I call a person schema. We have seen evidence for the key role of gaze detection in registering another person's direction of attention (see ii). But there is further evidence that gaze alone is not the critical information; we actually seem to rely on an integrated evaluation on the basis of perceiving gaze, head, and body position (Frischen et al, 2007). The same holds for the evaluation of the basic features sex, race, and age. Although isolated facial features are often sufficient to determine a person's sex, research has indicated that sex categorization is based on the integration of several features (Baudoin & Humphreys, 2006**;** Bruce et al., 1993**;** Schyns et al., 2002). Concerning face, the best available theory of face recognition seems to be Haxby's account (Haxby et al., 2000), according to which there are two distinguishable processes, one leading to face identification by focussing more on invariant core features, and the other leading to registering the facial expression by relying on varying features. Furthermore, there is evidence

that there are two different neural circuits for face perception and body perception (see the review by Macrae & Quadflieg, 2010), both playing a core part in registering face or body identity, and playing an extended part in registering face or body expression in a given situation. And the integration processes do not stop at this level. Since we know that information about facial and bodily features is integrated, e.g., in the evaluation of the emotional expression, we can therefore characterize a sequence of integration processes as leading finally to a person impression in a situation, which may be stored as a person schema in memory.

Person Images

What is a person image? A person image is a unity of relatively easily and explicitly available information about a person including her mind set. On the basis of typically implicit person schemata, young children learn to develop explicit person images. These are models of individual subjects or groups. In the case of individual subjects, they may include names, descriptions, stories, whole biographies, and visual images highlighting both mental and physical dispositions as well as episodes. Person images are essentially developed not only by observations but also by telling, exchanging, and creating stories (or 'narratives').[2] Person images presuppose the capacity to explicitly distinguish the representation of my own mental and physical phenomena from the representation of someone else's mental and physical phenomena. This ability develops gradually, reaching a major and important stage when children acquire the so-called explicit theory-of-mind ability (operationalized by the false-belief task, see Wimmer & Perner, 1983). Then they are able to construct explicit person images by characterizing a person such that they attribute a biography to an individual. There is strong folk-psychological evidence that we have explicit person models of the people we deal with extensively, e.g., family members, and people about whom we tend to have a lot of explicit knowledge. The same is true for relevant groups of persons we deal with often. Even in professional contexts this leads to judgments which can be inadequate: wearing revealing clothes, a signal of apparent immodesty and promiscuity, has been shown to cause not only laypeople but also police officers and judges to hold victims of rape to be responsible for their having been assaulted (Lennon, Johnson, & Schulz, 1999). It is an essential part of becoming an adult to learn to interact socially with other humans, by developing sophisticated and explicit person images of the groups of professions we have to find an arrangement with. We often have explicit beliefs about medical doctors, managers, secretaries, handicrafts men, etc., and we try to deploy these beliefs to deal with them in a smooth and efficient way. When we have stored a person image in memory, and are placed in a new situation in which we see and recognize the person, there is evidence that we immediately activate the biographical knowledge we have available. For example, when test persons had to judge the traits of target individuals from photographs, the test persons' responses continue to be influenced by what they have explicitly learned about them (Uleman et al, 2005). A recent neuroimaging study (Hassabis et al., 2013) indicated that when test persons had to predict the behaviour of persons, they relied essentially on prior knowledge of personality traits, which in this study were implemented in two ways, namely as agreeableness (the tendency toward altruism, cooperation, and the valuing of harmony in interpersonal relationships as opposed to antisocial and exploitative behaviours) and as extraversion (in contrast to introversion). The test person became acquainted with four types of personalities which result from the combinations of high and low versions of agreeableness, on the one hand, and high and low versions of extraversion, on the other. In the test situation they had to predict the behaviour of four specific persons who were exemplars of the four personality types. The authors report that the predictions of the behaviour are mainly based on the personality traits and that the latter had also rather clear neural correlates: by using fMRI the authors showed that there is a neural correlate for recognizing (and imagining) high agreeableness (in contrast to low), namely left LTC and dorsal mPFC, as well as for recognizing (and imagining) high extraversion (in contrast to low), namely pCC; in addition the recognition (and imagination) of one of the four personality types was correlated with four distinctive patterns in the anterior medial prefrontal cortex (mPFC). In line with my proposal, the authors of the fMRI study wrote: Different patterns of activation in the anterior mPFC could reliably distinguish between the different people whose behavior was being imagined. It is hypothesized that this region is responsible for assembling and updating personality models **(**Hassabis et al., 2013**)**. Since the study was based on explicit evaluation of personality features or types, I take this to be support for the existence of person images.

Person Models and Object Files

Further support is coming with the idea that person models are just a special case of memorized and reactivated objects files, i.e. object files of human beings. We have an extended literature on object files (e.g. Noles et al., 2005) and it is very plausible that we do not change our recognition system if we change from object recognition to person recognition, e.g. my evaluation of an object can be adjusted as the object looms closer as expressed in the familiar phrase, "It's a bird! It's a plane! Superman!" (Kahneman, Treisman, & Gibbs, 1992). This will be unfolded.

[2] This is the aspect of the narrative approach to understanding other minds (e.g., Hutto, 2008). But narratives are only one method for establishing a person model. Representatives of a pure narrative approach underestimate the importance of other sources, such as perceptions, feelings, interactions, etc., which often do not involve narratives.

References

Ambady, N., & Rosenthal, R. (1992). Thin slices of expressive behavior as predictors of interpersonal consequences: A meta-analysis. *Psychological Bulletin, 111(*2), 56–274. doi: 10.1037/0033-2909.111.2.256.

Baudoin, J.-Y., & Humphreys, G. W. (2006). Configural information in gender categorisation. *Perception, 35(4)*, 531–540. doi: 10.1068/p3403.

Bente, G., Leuschner, H., Al Issa, A., & Blascovich, J. J. (2010). The others: Universals and cultural specificities in the perception of status and dominance from nonverbal behavior. *Consciousness and Cognition, 19*(3), 762–777. doi: 10.1016/j.concog.2010.06.006.

Bertin, E., & Striano, T. (2006). The still-face response in newborn, 1.5-, and 3-month-old infants. *Infant Behavior and Development*, *29*(2), 294–297. doi: 10.1016/j.infbeh.2005.12.003.

Borkenau, P., & Liebler, A. (1992). Trait inferences: Sources of validity at zero acquaintance. *Journal of Personality and Social Psychology, 62*, 645–657. doi: 10.1037/0022-3514.62.4.645.

Carruthers, P. (2009). How we know our own minds. The relationship between mindreading and metacognition. *Behavioral and Brain Sciences, 32(2)*, 121–182.

Cleveland, A., & Striano, T. (2007). The effects of joint attention on object processing in 4- and 9-month-old infants. *Infant Behavior and Development, 30(3)*, 499–504. doi: 10.1016/j.infbeh.2006.10.009.

Devine, P. G., & Elliot, A. J. (1995). Are racial stereotypes really fading? The Princeton trilogy revisited. *Personality and Social Psychology Bulletin,* 21(11), 1139–1150. doi: 10.1177/01461672952111002.

Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology,* 24(3), 285–290. doi: 10.1037/h0033731.

Ekman, P., Friesen, W. V., & Ellsworth, P. (1972). Emotion in the Human Face. New York: Pergamon

Frey, S. (1999). Die nonverbale Kommunikation. Bern: Huber.

Gallagher, S. (2001). The practice of mind: Theory, simulation, or interaction? *Journal of Consciousness Studies*, 8 (5-7), 83–107.

Goldman, A. I. (2006). *Simulating Minds. The Philosophy, Psychology, and Neuroscience of Mindreading*. Oxford: Oxford University Press.

Griffiths, P. E. (1997). *What Emotions Really Are. The Problem of Psychological Categories.* Chicago: Chicago University Press.

Hassabis, D., Spreng, R. N., Rusu, A. A., Robbins, C. A., Mar, R. A., & Schacter, D. L. (2013). Imagine all the people: how the brain creates and uses personality models to predict behavior. *Cerebral Cortex*, March 5, 2013. doi:10.1093/cercor/bht042.

Haxby, J. V., Hoffman, E. A., & Gobbini, M. A. (2000). The distributed human neural system for face perception. *Trends in Cognitive Sciences*, 4(6), 223–233. doi: 10.1016/S1364-6613(00)01482-0.

Heberlein, A. S., Adolphs, R., Tranel, D., & Damasio, H. (2004). Cortical regions for judgments of emotions and personality traits from pointlight walkers. *Journal of Cognitive Neuroscience,* 16(7), 1143–1158. doi: 10.1162/0898929041920423.

Hutto, D. (2008). *Folk-psychological narratives*. Cambridge, MA: MIT Press.

Kahneman, D., Treisman, A., & Gibbs, B. J. (1992). The reviewing of object files: Object-specific integration of information. *Cognitive Psychology*, 24, 175-219.

Lennon, S. J., Johnson, K. K. P., & Schulz, T. L. (1999). Forging linkages between dress and law in the U.S., part I: Rape and sexual harassment. *Clothing and Textiles Research Journal*, 17(3), 144–156. doi: 10.1177/0887302X9901700305.

Lin, M. H., Kwan, V. S. Y., Cheung, A., & Fiske, S. T. (2005). Stereotype content model explains prejudice for an envied outgroup: Scale of Anti-Asian American stereotypes. *Personality and Social Psychology Bulletin, 31(1)*, 34–47. doi: 10.1177/0146167204271320.

Macrae, C. N. & Quadflieg, S. (2010). Perceiving people. In S. Fiske, D. T. Gilbert & G. Lindzey (Eds.) Handbook of social psychology (pp. 428-463). New York, NY: McGraw-Hill.

Nagy, E. (2008). Innate intersubjectivity: Newborn's sensitivity to communication disturbance. *Developmental Psychology*, 44(6), 1779–1784. doi: 10.1037/a0012665.

Nelson, C. A. (2001). The development and neural bases of face recognition. *Infant and Child Development,* 10(1-2), 3–18. doi: 10.1002/icd.239.

Newen, A.. (2015). Understanding Others - The Person Model Theory. In: Metzinger, T. & Windt, J.M. (Hrsg.): Open MIND 26, doi: 10.15502/9783958570320.

Noles, N.S., Scholl, B.J., & Mitroff, S.R. (2005). The persistence of object file representations, *Perception & Psychophysics* 2005, 67 (2), 324-334.

Panksepp, J. (2005). Affective consciousness: core emotional feelings in animals and humans. *Consciousness and Cognition,* 14(1), 30–80. doi: 10.1016/j.concog.2004.10.004.

Phillips, W., Baron-Cohen, S., & Rutter, M. (1992). The role of eye contact in goal detection. Evidence from normal infants and children with autism or mental handicap. *Development and Psychopathology,* 4(3), 375–383. doi: 10.1017/S0954579400000845.

Schyns, P. G., Bonnar, L., & Gosselin, F. (2002). Show me the features! Understanding recognition from the use of visual information. *Psychological Science*, 13(5), 402–409. doi: 10.1111/1467-9280.00472.

Tomasello, M. (1999). *The Cultural Origins of Human Cognition.* Cambridge, MA: Harvard University Press.

Willis, J., & Todorov, A. (2006). First impressions: Making up your mind after a 100-ms exposure to a face. *Psychological Science,* 17(7), 592–598. doi: 10.1111/j.1467-9280.2006.01750.x.

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition,* 13(1), 103–128. doi: 10.1016/0010-0277(83)90004-5.